NOVEMBER 1978 Number 411 -- Part I

astro QB1.U57
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P.A. STACKS
DEC 18 1978

Solar-Geophysical Data prompt reports

DEC 18 1978

Data for October 1978 -- September 1978

Explanation of Data Reports Issued as Number 402 (Supplement) February 1978

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Solar - Geophysical Data

NO. 411 NOVEMBER 1978

Part I (Prompt Reports)

DATA FOR
OCTOBER 1978
SEPTEMBER 1978

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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To standardize referencing these reports in the open literature, the following format is recommended:

Solar-Geophysical Data, 390 Part I (or Part II), pages, February 1977, U.S. Department of Commerce, (Boulder, Colorado, U.S.A. 80303).

SOLAR-GEOPHYSICAL DATA

No. 411

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE
OCTOBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of obser-vation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
274	1	30	196	142	09	N31W63	0	0	0		30	N31W63	Q	SOLNIL MAGNIL
						S17W14	0	0	0			S17W14	Q	
						S17W10	0	0	0			S17W10	Q	
						N36W03	0	0	0			N36W03	Q	
						N18W02	0	0	0			N18W02	Q	
						N39E10	0	0	0			N39E10	Q	
						S21E17	0	0	0			S21E17	Q	
						S12E27	0	0	0			S12E27	Q	
						N20E28	0	0	0			N20E28	Q	
						S14E60	2	0	0			S14E60	E	
						N17E64	1	0	0			N17E64	Q	
275	2	1	163	139	09	N31W77	1	0	0	PRESTO TOYOKAWA	1	N31W77	Q	SOLQUIET MAGQUIET
						S15W38	0	0	0	01/0734Z TENFLARE		S15W38	Q	
						N17W15	1	0	0	400 FLUX UNITS.		N17W15	Q	
						S18W27	0	0	0	PRESTO BOULDER		S18W27	Q	
						N39W02	0	0	0	01/1350Z SOFLARE		N39W02	Q	
						S23E04	0	0	0	M7/2B S14E57 01/		S23E04	Q	
						S15E49	1	1	0	0656Z DURATION 55		S15E49	C,A	
						N16E54	0	0	0	MINUTES. TENFLARE		N16E54	E	
						S17W36	0	0	0	350 FLUX UNITS		S17W36	Q	
						N15E41	0	0	0	01/0713Z DURATION 75 MINUTES		N15E41	Q	
276	3	2	180	138	09	S17W50	0	0	0		2	S17W50	Q	SOLALERT MAGQUIET
						N18W29	0	0	0			N18W29	E	
						S18W40	0	0	0			S18W40	C,E	
						N38W15	0	0	0			N38W15	C,E	
						S23W09	0	0	0			S23W09	D,E	
						S12E35	1	0	0			S12E35	C,A	
						N16E40	0	0	0			N16E40	C,E	
						S18W50	0	0	0			S18W50	Q	
						N17E26	0	0	0			N17E26	Q	
						S18W00	0	0	0			S18W00	Q	
277	4	3	141	132	09	N17W41	0	0	0		3	N17W41	Q	SOLNIL MAGQUIET
						S17W54	0	0	0			S17W54	Q	
						N39W27	0	0	0			N39W27	Q	
						S23W20	0	0	0			S23W20	Q	
						S12E20	3	0	0			S12E20	C,A	
						N16E32	1	0	0			N16E32	E	
						S19W64	0	0	0			S19W64	Q	
						S18W11	0	0	0			S18W11	Q	
						N27E33	0	0	0			N27E33	Q	
278	5	4	195	135	13	N17W54	0	0	0		4	N17W54	Q	SOLQUIET MAGQUIET
						N39W40	0	0	0			N39W40	Q	
						S23W35	0	0	0			S23W35	Q	
						S12E07	4	0	0			S12E07	C,A	
						N17E19	0	0	0			N17E19	Q	
						S17W77	0	0	0			S17W77	Q	
						S17W26	0	0	0			S17W26	Q	
						N28E19	2	0	0			N28E19	E	
						N42W30	0	0	0			N42W30	Q	
						S30W05	0	0	0			S30W05	Q	
						N31E05	0	0	0			N31E05	Q	
						N17E27	0	0	0			N17E27	Q	
						S22E47	0	0	0			S22E47	Q	
279	6	5	108	140	06	N17W66	0	0	0	SOUTHEAST LIMB	5	N17W66	Q	SOLQUIET MAGQUIET
						S26W48	0	0	0	ACTIVE		S26W48	Q	
						S12W08	3	0	0			S12W08	A	
						N13E10	0	0	0			N13E10	Q	
						N29W16	0	0	0			N29W16	Q	
						N15E15	0	0	0			N15E15	Q	
						N14E82	0	0	0			N14E82	Q	
280	7	6	140	137	04	N18W80	0	0	0		6	N18W80	Q	SOLALERT MAGQUIET
						S14W19	1	0	0			S14W19	A	
						N13W04	0	0	0			N13W04	Q	
						N29W29	0	0	0			N29W29	Q	
						N14E03	0	0	0			N14E03	Q	
						N17E68	1	0	0			N17E68	Q	
						N13W65	0	0	0			N13W65	Q	
						S18E73	2	1	0			S18E73	A	
						S32E71	0	0	0			S32E71	Q	
281	8	7	184	142	03	N17W93	0	0	0		7	N17W93	Q	SOLALERT MAGQUIET
						S14W33	3	0	0			S14W33	A	
						N30W34	0	0	0			N30W34	Q	
						N14W14	0	0	0			N14W14	Q	
						S22E03	0	0	0			S22E03	Q	
						N18E54	0	0	0			N18E54	Q	
						S19E62	0	0	0			S19E62	C,A	
						S30E52	0	0	0			S30E52	Q	
						N22E18	0	0	0			N22E18	Q	
						S16E67	0	0	0			S16E67	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

OCTOBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Flares: Total	Flares: M	Flares: X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
282	9	8	176	150	05	S13W46	8	0	0		8	S13W46	C,P	MAJOR FLARE ALERT MAGQUIET
						N16W32	0	0	0			N16W32	Q	
						N13W29	0	0	0			N13W29	Q	
						S23W10	0	0	0			S23W10	Q	
						N22E06	0	0	0			N22E06	Q	
						S30E39	0	0	0			S30E39	Q	
						N18E41	0	0	0			N18E41	Q	
						S16E43	2	0	0			S16E43	D,A	
						S19E48	2	0	0			S19E48	D,A	
						S16E55	1	0	0			S16E55	E	
						N21E72	0	0	0			N21E72	Q	
283	10	9	204	156	09	S13W60	4	1	0		9	S13W60	A	SOLALERT 10/11 MAGQUIET
						N29W56	0	0	0			N29W56	Q	
						S22W21	0	0	0			S22W21	E	
						N17E27	1	0	0			N17E27	E	
						S20E35	0	0	0			S20E35	Q	
						S31E23	0	0	0			S31E23	Q	
						N22W07	0	0	0			N22W07	E	
						S14E41	0	0	0			S14E41	Q	
						S15E30	0	0	0			S15E30	Q	
						N22E60	0	0	0			N22E60	Q	
						N37E09	0	0	0			N37E09	Q	
						S18E71	0	0	0			S18E71	Q	
						N29E88	0	0	0			N29E88	Q	
284	11	10	191	160	10	N12W72	2	0	0		10	N12W72	A	SOLALERT 11/12 MAGALERT MINOR 11/12
						N29W73	0	0	0			N29W73	Q	
						S23W34	2	0	0			S23W34	A	
						N18E14	0	0	0			N18E14	Q	
						S19E19	0	0	0			S19E19	Q	
						N23W18	0	0	0			N23W18	Q	
						S15E18	0	0	0			S15E18	Q	
						N22E47	1	0	0			N22E47	E	
						S17E58	0	0	0			S17E58	Q	
						N29E72	0	0	0			N29E72	Q	
						S26E33	0	0	0			S26E33	Q	
						N19E47	0	0	0			N19E47	Q	
285	12	11	257	177	05	S13W90	0	0	0		11	S13W90	Q	SOLALERT 12 MAGALERT MINOR 12
						N29W86	0	0	0			N29W86	Q	
						S24W48	0	0	0			S24W48	Q	
						N18E02	0	0	0			N18E02	Q	
						S20E06	1	0	0			S20E06	E	
						N23W29	0	0	0			N23W29	Q	
						S17E15	0	0	0			S17E15	Q	
						N21E32	0	0	0			N21E32	Q	
						S19E47	1	0	0			S19E47	E	
						N29E59	0	0	0			N29E59	Q	
						S24E18	1	0	0			S24E18	A	
						S19E38	0	0	0			S19E38	Q	
						S19E23	0	0	0			S19E23	Q	
						S23E57	0	0	0			S23E57	Q	
						S22E73	0	0	0			S22E73	Q	
						N32E76	0	0	0			N32E76	Q	
						S15E08	0	0	0			S15E08	Q	
286	13	12	276	179	07	S24W62	0	0	0	PRESTO BOULDER 12/	12	S24W62	C,A	SOLALERT MAGNIL
						N23W45	2	0	0	0354Z TENFLARE 210		N23W45	Q	
						N18W11	0	0	0	FLUX UNITS 12/0153Z		N18W11	Q	
						S16W09	0	0	0	DURATION 52 MINUTES		S16W09	Q	
						S20W07	0	0	0	M1/LOOPS SW12		S20W07	Q	
						S16E02	0	0	0	M1/1B SW14 12/1442Z		S16E02	Q	
						S25E07	0	0	0	59 MINUTES X-RAY		S25E07	Q	
						S19E10	1	0	0	DURATION.		S19E10	E	
						S19E18	0	0	0			S19E18	Q	
						N21E19	1	0	0			N21E19	Q	
						S18E33	2	0	0			S18E33	E	
						S22E44	0	0	0			S22E44	Q	
						N29E45	0	0	0			N29E45	Q	
						S21E55	0	0	0			S21E55	Q	
						N33E60	0	0	0			N33E60	Q	

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287	14	13	245	179	08	S24W76	4	0	0	PRESTO BOULDER	13	S24W76	C,A	SOLALERT MAGALERT 15/16
						N16W25	0	0	0	13/1412Z SOFLARE		N16W25	Q	
						S20W17	0	0	0	M8/1B S20E03 13/		S20W17	Q	
						N21W63	0	0	0	1237Z DURATION 20		N21W63	Q	
						N20E05	0	0	0	MINUTES. TENFLARE		N20E05	Q	
						S18E19	0	0	0	380 FLUX UNITS		S18E19	Q	
						N28E73	0	0	0	13/1235Z DURATION		N28E73	Q	
						S25W05	0	0	0	21 MINUTES.		S25W05	Q	
						S19W01	4	1	0			S19W01	A	
						S21E40	0	0	0			S21E40	Q	
						N33E49	0	0	0			N33E49	Q	
						N17E76	0	0	0			N17E76	Q	
						N26E82	0	0	0			N26E82	Q	
288	15	14	284	181	05	S24W89	1	1	0	PRESTO TOYOKAWA	14	S24W89	D,P	SOLALERT MAGALERT 15/17
						N16W38	0	0	0	15/0007Z TENFLARE		N16W38	E	
						S21W31	0	0	0	170 FLUX UNITS 14/		S21W31	Q	
						N22W76	0	0	0	2332Z DURATION 8		N22W76	Q	
						N20W08	0	0	0	MINUTES. M9 X-RAY		N20W08	Q	
						S17E07	0	0	0	14/2337Z 19 MINUTES		S17E07	Q	
						N29E19	0	0	0	DURATION. ADDITION-		N29E19	Q	
						S25W18	0	0	0	AL 3 M1 X-RAY		S25W18	Q	
						S20W13	2	0	0	EVENTS, NO OPTICAL		S20W13	D,P	
						S20E26	1	0	0	REPORTS.		S20E26	D,A	
						N33E36	0	0	0			N33E36	Q	
						N19E63	0	0	0			N19E63	Q	
						N31E69	0	0	0			N31E69	Q	
						S22W47	0	0	0			S22W47	Q	
						N14E26	0	0	0			N14E26	Q	
289	16	15	298	183	04	N16W51	2	0	0		15	N16W51	Q	SOLALERT MAGALERT 16/17
						S21W45	0	0	0			S21W45	Q	
						N20W20	2	0	0			N20W20	Q	
						N34W64	0	0	0			N34W64	Q	
						S18W06	0	0	0			S18W06	Q	
						N29E06	0	0	0			N29E06	Q	
						S25W31	0	0	0			S25W31	Q	
						S20W27	1	0	0			S20W27	D,P	
						S22E12	0	0	0			S22E12	D,A	
						N32E21	0	0	0			N32E21	Q	
						N18E51	1	0	0			N18E51	Q	
						N31E57	1	0	0			N31E57	Q	
						S21W62	0	0	0			S21W62	Q	
						N15E10	0	0	0			N15E10	Q	
290	17	16	272	179	07	N18W63	0	0	0	PRESTO BOULDER	16	N18W63	Q	SOLALERT 17/18 MAGALERT 17
						S21W59	0	0	0	16/2312Z TENFLARE		S21W59	Q	
						N21W35	0	0	0	530 FLUX UNITS		N21W35	Q	
						N34W79	0	0	0	10/2144Z DURATION		N34W79	Q	
						S18W20	0	0	0	2 MINUTES.		S18W20	Q	
						N29W04	0	0	0	PRESTO SYDNEY 16/		N29W04	Q	
						S25W45	0	0	0	2248Z TENFLARE		S25W45	Q	
						S20W43	6	0	0	650 FLUX UNITS		S20W43	A	
						S21W02	3	0	0	16/2143Z MAX 16/		S21W02	E	
						N33E12	0	0	0	2147Z. DURATION		N33E12	Q	
						N17E37	0	0	0	5 MINUTES		N17E37	Q	
						N30E44	6	1	0			N30E44	A	
						S19W77	0	0	0			S19W77	Q	
						N13W01	0	0	0			N13W01	Q	
						S18E40	0	0	0			S18E40	Q	
291	18	17	215	173	03	N17W78	0	0	0		17	N17W78	Q	SOLALERT MINOR 18 MAGNIL
						S21W73	0	0	0			S21W73	Q	
						N21W49	1	0	0			N21W49	E	
						N29W19	0	0	0			N29W19	Q	
						S26W56	0	0	0			S26W56	Q	
						S21W56	2	0	0			S21W56	Q	
						S21W16	2	0	0			S21W16	Q	
						N18E23	1	0	0			N18E23	Q	
						N31E32	2	0	0			N31E32	A	
						N30E80	0	0	0			N30E80	Q	
						S21E76	0	0	0			S21E76	Q	
						S27E41	0	0	0			S27E41	Q	

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292	19	18	242	171	19	S21W86	0	0	0	A MINOR GEOMAG-	18	S21W86	Q	SOLALERT 19 MAGQUIET
						N21W60	1	0	0	NETIC STORM		N21W60	A	
						N28W21	0	0	0	STARTED 18/0425Z		N28W21	Q	
						S21W67	1	0	0	AND HAS NOW SUB-		S21W67	E	
						S22W29	1	0	0	SIDED TO UNSETTLED		S22W29	E	
						N18E11	0	0	0	CONDITION		N18E11	Q	
						N31E18	1	0	0			N31E18	E	
						S18E12	0	0	0			S18E12	Q	
						N29E70	1	0	0			N29E70	E	
						S21E62	0	0	0			S21E62	Q	
						S28E27	1	0	0			S28E27	Q	
						N36E52	0	0	0			N36E52	Q	
						N33E64	0	0	0			N33E64	Q	
293	20	19	236	172	15	N21W73	2	0	0		19	N21W73	E	SOLALERT MAGALERT
						N28W43	0	0	0			N28W43	Q	
						S26W82	0	0	0			S26W82	E	
						S22W43	6	0	0			S22W43	E	
						N18W00	0	0	0			N18W00	Q	
						N31E06	0	0	0			N31E06	E	
						N27E58	6	1	0			N27E58	A	
						S21E48	0	0	0			S21E48	Q	
						S28E13	0	0	0			S28E13	E	
						N32E53	0	0	0			N32E53	Q	
						N16E29	0	0	0			N16E29	Q	
						S16E15	0	0	0			S16E15	Q	
294	21	20	218	173	07	N20W87	0	0	0		20	N20W87	Q	SOLALERT MAGNIL
						N28W56	0	0	0			N28W56	Q	
						S22W56	8	0	0			S22W56	A	
						N18W12	0	0	0			N18W12	Q	
						N30W06	1	0	0			N30W06	C,A	
						N27E44	4	0	0			N27E44	A	
						S21E36	0	0	0			S21E36	Q	
						S27E01	2	0	0			S27E01	C,A	
						N32E40	0	0	0			N32E40	Q	
						N17E17	0	0	0			N17E17	Q	
						S16E02	0	0	0			S16E02	Q	
						N16E72	0	0	0			N16E72	Q	
295	22	21	250	170	08	N28W70	0	0	0		21	N28W70	Q	SOLALERT 22/23 MAGQUIET
						S22W72	3	0	0			S22W72	A	
						N17W27	0	0	0			N17W27	Q	
						N30W19	1	0	0			N30W19	C,A	
						N27E34	1	0	0			N27E34	A	
						S21E22	0	0	0			S21E22	D,A	
						S28W09	0	0	0			S28W09	C,A	
						N32E27	0	0	0			N32E27	Q	
						N16E03	0	0	0			N16E03	D,A	
						S16W10	0	0	0			S16W10	E	
						N16E56	0	0	0			N16E56	Q	
						N13W40	0	0	0			N13W40	Q	
296	23	22	238	163	10	N28W84	0	0	0		22	N28W84	Q	SOLALERT 23/25 MAGALERT 23/26
						S22W86	0	0	0			S22W86	D,A	
						N17W43	0	0	0			N17W43	Q	
						N30W32	0	0	0			N30W32	Q	
						N26E21	0	0	0			N26E21	C,A	
						S22E10	1	0	0			S22E10	D,A	
						S28W23	0	0	0			S28W23	C,A	
						N32E14	0	0	0			N32E14	Q	
						N14W09	0	0	0			N14W09	Q	
						S18W21	0	0	0			S18W21	Q	
						N13E41	0	0	0			N13E41	Q	
						N13W53	0	0	0			N13W53	Q	
						S17E39	0	0	0			S17E39	Q	
						N19E74	0	0	0			N19E74	Q	
297	24	23	160	164	06	N30W43	0	0	0		23	N30W43	C,E	SOLNIL MAGNIL
						N26E08	2	0	0			N26E08	C,A	
						S22W02	0	0	0			S22W02	C,E	
						S28W36	0	0	0			S28W36	D,A	
						N32E01	0	0	0			N32E01	Q	
						S18W27	0	0	0			S18W27	Q	
						N13W68	0	0	0			N13W68	Q	
						S17E22	1	0	0			S17E22	Q	
						N21E61	2	0	0			N21E61	D,A	
						S17E70	0	0	0			S17E70	Q	
						S23E65	0	0	0			S23E65	Q	

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298	25	24	194	159	05	N30W56	0	0	0		24	N30W56	Q	SOLQUIET MAGQUIET
						N26W05	2	0	0			N26W05	E	
						S22W16	0	0	0			S22W16	Q	
						S28W48	0	0	0			S28W48	Q	
						N32W11	0	0	0			N32W11	Q	
						N14W31	0	0	0			N14W31	Q	
						S16W44	0	0	0			S16W44	Q	
						S18E10	0	0	0			S18E10	Q	
						N19E48	2	0	0			N19E48	E	
						S17E58	1	0	0			S17E58	Q	
						S22E52	0	0	0			S22E52	Q	
						N19E24	0	0	0			N19E24	Q	
						S17E73	0	0	0			S17E73	Q	
299	26	25	146	158	06	N30W70	0	0	0	PRESTO BOULDER	25	N30W70	Q	SOLQUIET MAGQUIET
						N27W19	1	0	0	SOFLARE 28/C6		N27W19	E	
						S22W29	0	0	0	S10E90 25/1155Z		S22W29	Q	
						N32W23	0	0	0	DURATION 40		N32W23	Q	
						N14W44	0	0	0	MINUTES		N14W44	Q	
						S18W03	0	0	0			S18W03	Q	
						N19E36	0	0	0			N19E36	E	
						S17E45	0	0	0			S17E45	Q	
						N20E12	0	0	0			N20E12	Q	
						S18E59	1	0	0			S18E59	Q	
300	27	26	167	143	13	N28W82	0	0	0		26	N28W82	Q	SOLALERT MINOR 28
						N27W30	0	0	0			N27W30	E	MAGALERT MINOR 27/28
						S20W42	0	0	0			S20W42	Q	
						N32W37	0	0	0			N32W37	Q	
						S17W16	0	0	0			S17W16	Q	
						N18E23	0	0	0			N18E23	Q	
						S16E30	1	0	0			S16E30	E	
						N19W02	0	0	0			N19W02	Q	
						S18E49	2	0	0			S18E49	Q	
						N22E18	0	0	0			N22E18	E	
						S14E74	1	0	0			S14E74	E	
						N29E77	0	0	0			N29E77	Q	
301	28	27	171	153	19	N26W44	0	0	0		27	N26W44	E	SOLQUIET MAGALERT 28/28
						S20W55	0	0	0			S20W55	Q	
						N33W49	0	0	0			N33W49	E	
						S17W29	0	0	0			S17W29	Q	
						N18E10	3	0	0			N18E10	E	
						S18E25	1	0	0			S18E25	E	
						N19W15	0	0	0			N19W15	Q	
						N23E05	0	0	0			N23E05	Q	
						S13E62	0	0	0			S13E62	Q	
						N29E64	0	0	0			N29E64	Q	
302	29	28	152	154	14	S21W67	0	0	0	PRESTO BOULDER	28	S21W67	Q	SOLQUIET MAGNIL
						N33W62	0	0	0	28/1638Z SOFLARE		N33W62	Q	
						N26W57	2	0	0	R3/2B N20E01		N26W57	D,A	
						S18W41	1	0	0	28/1555Z DURATION		S18W41	D,A	
						N19W28	0	0	0	14 MINUTES		N19W28	Q	
						N22W08	0	0	0			N22W08	E	
						N18W02	4	1	0			N18W02	C,A	
						S18E12	0	0	0			S18E12	E	
						S13E48	0	0	0			S13E48	E	
						N29E52	0	0	0			N29E52	Q	
303	30	29	185	152	12	N25W72	1	0	0		29	N25W72	E	SOLALERT 30/XX MAGQUIET
						S22W84	0	0	0			S22W84	Q	
						N32W76	0	0	0			N32W76	Q	
						S18W57	0	0	0			S18W57	Q	
						N17W17	1	0	0			N17W17	A	
						S17W01	1	0	0			S17W01	A	
						N20W42	0	0	0			N20W42	Q	
						N22W21	2	0	0			N22W21	A	
						S13E35	0	0	0			S13E35	Q	
						N30E39	0	0	0			N30E39	Q	
						S09E47	1	0	0			S09E47	C,A	
						S19E66	0	0	0			S19E66		

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						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
304	31	30	181	149	18	N26W86	0	0	0		30	N26W86	Q	SOLALERT 31/XX MAGQUIET
						S18W70	1	0	0			S18W70	Q	
						N17W30	0	0	0			N17W30	A	
						S17W11	0	0	0			S17W11	Q	
						N21W34	0	0	0			N21W34	E	
						S13E22	0	0	0			S13E22	Q	
						N30E27	0	0	0			N30E27	Q	
						S10E32	0	0	0			S10E32	Q	
						S20E55	0	0	0			S20E55	Q	
						S29W67	0	0	0			S29W67	Q	
						N16W07	0	0	0			N16W07	Q	
305	01	31	156	146	16	S18W80	0	0	0		31	S18W80	Q	SOLNIL MAGQUIET
						N17W43	0	0	0			N17W43	Q	
						S17W36	0	0	0			S17W36	Q	
						N21W47	0	0	0			N21W47	Q	
						S13E08	0	0	0			S13E08	Q	
						N29E14	0	0	0			N29E14	Q	
						S11E18	0	0	0			S11E18	Q	
						S21E41	0	0	0			S21E41	Q	
						S29W79	0	0	0			S29W79	Q	
						N36W23	0	0	0			N36W23	Q	
						N05E41	0	0	0			N05W41	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

	1977 FINAL		1978 PROVISIONAL									
DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	44	20	84	128	93	70	77	119	46	42	127	90
2	40	20	88	120	83	68	85	93	61	48	167	119
3	25	31	102	131	95	71	91	74	47	38	151	107
4	22	47	102	138	103	75	76	60	34	62	161	91
5	25	58	73	137	76	94	74	51	54	74	175	55
6	27	58	69	129	67	92	73	29	57	66	178	71
7	34	55	42	121	90	88	70	39	84	58	148	95
8	27	45	36	89	99	105	56	45	105	62	120	103
9	31	58	36	94	85	126	59	36	108	64	109	121
10	25	75	15	96	92	111	57	29	115	67	105	149
11	26	71	18	95	95	109	63	57	127	58	84	158
12	27	62	26	92	78	107	65	62	111	71	72	158
13	28	44	26	93	65	93	72	56	114	85	88	156
14	31	37	36	82	62	75	72	62	109	93	113	170
15	39	41	30	59	72	61	78	89	102	72	133	166
16	49	39	23	64	70	85	91	97	110	42	148	163
17	51	29	24	56	66	99	79	103	98	49	136	137
18	54	33	14	55	72	100	85	115	78	53	158	123
19	52	40	8	53	64	107	84	109	74	42	150	154
20	38	23	7	52	51	115	74	109	76	28	163	151
21	32	23	20	63	77	112	73	154	77	26	172	144
22	28	17	30	74	82	109	73	158	48	36	148	125
23	24	23	43	69	85	105	72	153	33	45	156	116
24	18	31	37	78	82	102	82	154	38	45	167	103
25	10	35	32	94	70	139	86	135	30	54	163	96
26	9	41	47	86	53	115	84	152	13	37	152	91
27	14	50	69	79	50	90	97	134	21	55	140	115
28	9	45	79	88	49	75	90	130	31	58	122	117
29	18	58	90		48	72	103	115	48	59	122	137
30	23	64	104		44	70	107	99	35	70	91	129
31		67	118		70		109		36	100		98
MEAN	29.1	43.2	49.3	89.8	73.5	94.7	79.3	94.1	68.4	56.7	137.3	122.8

1977 yearly mean = 27.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1977		1978									
DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	94.4	88.4	126.9*	139.1	136.3	130.0	181.4	149.1	142.9	106.8	159.8	139.0
2	93.6	91.2	133.9	152.6	141.1	129.8	183.0	147.0*	127.6	106.0	171.7*	137.8
3	90.4	93.7	130.2	156.6*	146.6	134.5	182.2A	130.8	116.5	109.6	167.0	131.7
4	89.4	95.9	124.8	154.0	148.4	143.3*	176.4	118.6	117.4	112.3	174.4*	132.0*
5	90.6	96.9	119.2	159.0	154.5	146.7*	173.9*	116.9	118.9	117.6	179.4	138.7*
6	91.1	102.0*	118.7*	156.1	162.8	145.3*	173.1	119.8	119.3*	122.6	181.1	137.4
7	90.2	105.5	111.6	157.3	165.2	146.9	162.6*	110.6	128.9	128.2	177.5	141.6
8	90.3	106.7	102.8	157.0*	168.7	148.6	143.4	109.3	135.9	130.6	167.1	150.1
9	91.1	112.6*	97.8	155.2	163.7	156.1	135.1	106.5	147.1*	128.1*	157.6*	155.8
10	93.1	114.7	93.5	148.7	179.1	155.4	129.5	108.4	156.0*	127.5	149.8	162.3
11	94.9	107.4	93.1	154.2	175.2	162.8*	133.8	113.2	163.2*	121.7	141.5	171.6*
12	91.4	111.0	92.1	159.0	169.6	156.2	138.2	116.4*	174.2*	124.5	138.5	177.2
13	94.0	110.6	90.3	151.2	160.9	145.6	140.2	120.3*	165.5	134.9	138.0	178.5
14	97.9	93.7*	88.6	148.4	160.5	139.1	143.7	126.4*	163.1	132.7	143.5*	180.1
15	97.9	92.5	89.6	136.8	154.2	141.4	146.1	132.5	169.5	130.0*	152.6	182.0
16	95.9	92.5	86.4	130.2	143.3	137.6	147.8*	139.5*	163.4	123.6	161.5	176.7*
17	100.4	91.1	93.8	125.9	135.4	133.4	143.8	149.0	159.5	119.3*	161.8	171.5
18	102.0*	93.6	84.7	124.9	132.3	134.1	135.6	153.5*	154.1*	115.6	169.3*	169.4
19	99.2	91.0	95.4	119.1	128.1	139.5*	133.6	162.0*	148.6	111.6	168.8*	170.4
20	95.7*	88.7	97.0	122.2	125.3	138.1	132.3*	174.2	142.9*	107.5	168.6	171.0
21	92.8	87.8	91.4	122.2	118.2	138.4*	132.7	185.4*	140.2	104.8	172.5	166.9*
22	89.3	89.9	96.9	127.7	117.0	146.4	135.7*	190.3	127.0	106.0	171.5*	161.4
23	88.0	91.2	99.6	131.8	116.4	162.9	142.9*	196.7	123.4*	104.1	165.5*	161.4
24	86.7	93.9	100.4	135.6	117.5	159.8	146.5*	194.8	118.5	105.4	158.9	156.9
25	84.7	96.3	103.3	139.3	118.2	159.1*	147.6	183.5	113.7	104.2	157.2	156.1
26	84.1	99.3	112.7	134.8	112.5	166.7	152.9	182.4*	112.2	100.7	148.5	154.4
27	83.8	98.3	116.4	137.5	114.1	172.8	150.6*	179.5	110.5	107.3*	146.2*	150.7
28	85.6	98.9	127.7*	135.4	112.7	176.6*	147.1*	174.1	109.9	107.7*	147.8	148.4*
29	85.6	105.6*	132.2*		111.1	185.2	148.6	167.4	109.2	116.2	148.1	149.8
30	85.3	114.7	134.9		115.4*	182.1*	147.2*	154.6*	109.2	124.1	142.6	146.5
31		120.2	133.3*		124.5		152.6		108.8	133.9*		144.0
MEAN	91.6	98.9	106.1	141.8	140.3	150.5	149.7	146.8	135.4	116.9	159.6	157.1

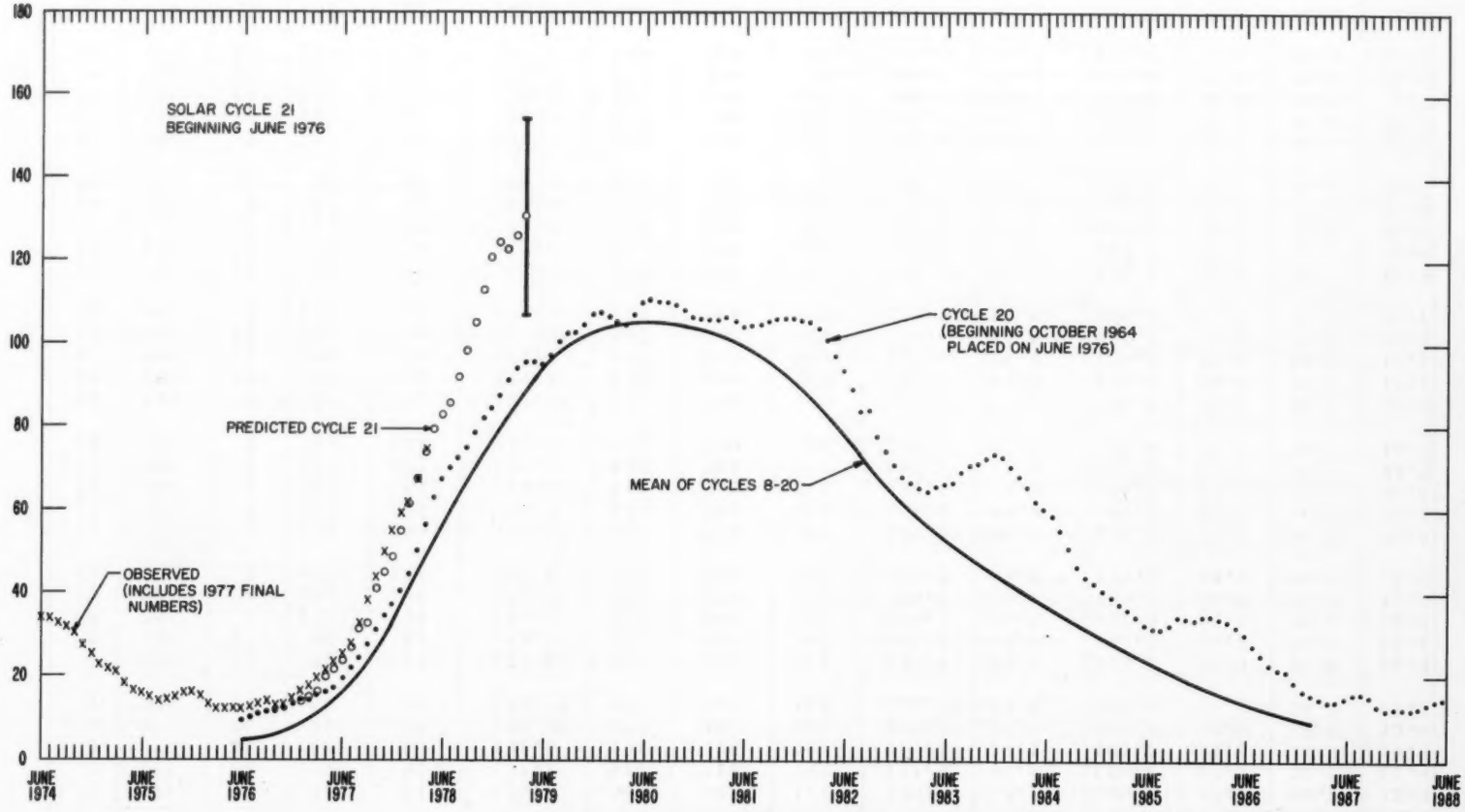
* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

OCTOBER 1978

OCT 1978	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	274	21	90	73	138.7	580	323	171	139.0	142.2	114.6	72.2	32.2	13.8
2	275	22	119	90	137.7	577	318	165	137.8	140.8	104.2	68.5	31.1	11.4
3	276	23	107	86	131.6	581	325	162	131.7	139.8	105.0	69.2	31.3	10.6
4	277	24	91	69	132.0*	578	321	160	132.0*	137.9	105.1	68.4	29.7	10.8
5	278	25	55	59	138.7*	577	317	168	138.7*	143.0	107.0	71.0	34.2	11.7
6	279	26	71	73	137.5	579	323	181	137.4	158.7	103.2	66.9	32.8	11.3
7	280	27	95	83	141.7	580	333	183	141.6	149.4	103.5	67.2	33.8	11.1
8	281	1	103	98	150.4	590	343	187	150.1	156.5	107.9	68.3	34.6	13.9
9	282	2	121	108	156.3	593	350	191	155.8	166.3	109.1	67.9	35.2	13.0
10	283	3	149	131	162.8	592	348	192	162.3	166.7	112.6	69.5	36.9	15.6
11	284	4	158	148	172.3*	602	358	211	171.6*	184.5	122.1	71.9	34.6	20.2
12	285	5	158	145	177.9	600	352	217	177.2	185.0	125.5	74.6	36.7	22.8
13	286	6	156	156	179.4	590	346	213	178.5	183.1	126.7	82.8	52.6	36.4
14	287	7	170	177	181.0	593	352	217	180.1	192.3	133.3	77.8	37.9	20.9
15	288	8	166	163	183.1	596	359	221	182.0	201.5	130.4	74.7	35.7	14.2
16	289	9	163	151	177.9*	596	353	195	176.7*	184.8	124.5	81.0	35.5	13.6
17	290	10	137	148	172.7	595	354	200	171.5	185.3	126.1	75.8	37.2	17.4
18	291	11	123	134	170.8	598	350	200	169.4	179.0	124.2	78.4	38.9	17.1
19	292	12	154	144	171.8	590	350	202	170.4	180.5	121.8	74.4	34.0	16.5
20	293	13	151	125	172.6	593	349	197	171.0	178.5	125.6	73.3	36.2	17.7
21	294	14	144	129	168.4*	597	357	207	166.9*	184.8	116.6	68.8	34.1	18.9
22	295	15	125	128	163.0	595	355	184	161.4	164.9	113.2	69.5	32.2	14.4
23	296	16	116	110	163.0	593	350	185	161.4	165.4	114.0	68.2	30.3	16.5
24	297	17	103	93	158.6	592	347	182	156.9	168.0	112.8	70.7	33.3	15.6
25	298	18	96	98	158.0	588	341	181	156.1	166.7	116.3	64.8	31.6	11.7
26	299	19	91	99	156.3	586	334	181	154.4	162.7	116.2	68.7	32.1	12.4
27	300	20	115	112	152.7	585	330	178	150.7	160.3	113.2	72.7	35.5	15.5
28	301	21	117	115	150.4*	582	335	169	148.4*	156.9	115.1	72.2	31.9	11.7
29	302	22	137	121	151.9	578	340	176	149.8	159.2	113.4	75.2	33.5	14.6
30	303	23	129	127	148.6	583	342	173	146.5	154.7	117.8	73.1	35.0	11.3
31	304	24	98	102	146.2	586	334	171	144.0	151.9	115.4	74.3	34.4	12.0
MEAN			122.8	116.0	158.2	589	342	188	157.1	166.2	116.0	72.0	34.7	15.3

* Adjusted for burst.



OBSERVED AND PREDICTED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	14.0	14.3	13.4	13.5	14.8
1977	16.7	18.1	20.0	22.2	24.2	26.3	28.8	33.0	38.5	44.6	50.5	55.4
1978	59.6	62.7	67.7	74.9	81.7	87.7	92.6	97.1	101.2	104.9	109.2	115.2
					(2)	(5)	(9)	(12)	(14)	(16)	(15)	(14)
1979	120.1	124.4	128.4	131.0	133.5	137.7	141.9	144.7	146.5	147.4	147.7	147.2
	(13)	(15)	(19)	(24)	(27)	(29)	(32)	(34)	(36)	(38)	(39)	(40)
1980	146.0	144.6	144.1	144.7	144.1	141.1	137.9	135.2	133.7	132.8	131.3	129.8
	(41)	(40)	(38)	(38)	(39)	(41)	(43)	(44)	(43)	(44)	(46)	(49)
1981	129.3	128.6	126.3	123.4	121.1	118.8	117.8	117.6	116.7	115.4	113.2	110.3
	(52)	(52)	(50)	(49)	(49)	(48)	(47)	(46)	(45)	(45)	(43)	(41)
1982	107.5	104.5	102.0	100.0	97.8	95.3	91.5	87.2	83.4	79.2	76.1	72.6
	(39)	(38)	(37)	(35)	(33)	(32)	(30)	(28)	(26)	(23)	(21)	(21)
1983	68.6	65.7	63.7	61.5	59.5	57.2	55.3	53.4	51.6	50.3	49.4	48.7
	(21)	(21)	(22)	(22)	(22)	(23)	(24)	(26)	(27)	(29)	(30)	(30)
1984	47.6	45.9	43.3	40.2	37.7	36.4	35.4	33.9	32.4	31.4	30.2	28.7
	(31)	(30)	(29)	(29)	(29)	(31)	(31)	(31)	(30)	(29)	(27)	(27)
1985	27.5	26.6	25.7	25.2	24.5	23.6	22.8	22.0	21.3	20.4	19.5	18.9
	(27)	(26)	(26)	(26)	(26)	(24)	(23)	(22)	(22)	(23)	(24)	(24)
1986	18.6	18.0	17.3	16.4	15.3	14.1	13.3	12.7	12.4	12.2	12.0	11.9
	(24)	(24)	(23)	(22)	(21)	(20)	(19)	(18)	(17)	(16)	(15)	(13)
1987	12.2	12.7	13.6	14.5	15.5	16.5	17.4					
	(12)	(11)	(11)	(11)	(12)	(13)	(14)					

The table gives observed Zürich smoothed sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1977 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1978 are received. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1978). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

The McNish-Lincoln method is very sensitive to the identification of a minimum epoch. In SGD 390-401 issues, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Latest studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we have adopted a June 1976 mimimum.

*Prediction of Sunspot Maximum -- The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly towards the mean value. Combining this McNish-Lincoln prediction of sunspot maximum with the Ohl method (as done by Sargent, see *Explanation of Data Reports*, February 1978) indicates that the most probable value for sunspot maximum is 150 ± 34.

Hα SOLAR FLARES

OCTOBER 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	NOAA PLAGE REGION	CMP DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
TEHR	01	0653	0730	0913	S10	E55	.815	15570	5.4	140	2B	2	C		668		Z U
BUCA	01	0700E	0730	0900	S14	E57	.835	15570	5.6	120D	2N		C	0730	537	11.7	U
ISTA	01	0705		0845	S12	E59	.852		5.7	100	SN			0730			F
ATHN	01	0713	0718	0840	S30	E50	.795	15564	5.1	87	2N	1		0718	491	7.8	
RAMY	01	1337	1343	1350	N30	W68	.963		27.5	13	SN	4	C		15		
PALE	02	0225	0226	0229	N28	W79	.993		27.2	4	SN	3	C		16		DE
TEHR	02	0644	0647	0712	S12	E43	.680		5.5	28	SN	2	C		63		
ISTA	02	0650E		0705D	S10	E43	.678		5.5	15D	SN						D
BUCA	02	0835		0849	S21	W85	.993		27.0	14	SN		C	0836	43		D
ISTA	03	0715		0745	S20	W57	.838		30.0	30	SN						D
ISTA	03	0755		0835	S20	E46	.728	15581	6.8	40	2B			0815			F
BUCA	03	0755	0802	0835	S17	W59	.854	15581	29.9	40	1N		C	0802	161	3.6	
ISTA	03	0835		0850	N17	E36	.675		6.1	15	SN						E
ISTA	03	0835		0845	S07	E27	.451		5.4	10	SF						E
HOLL	03	1422	1428	1454	N18	E35	.671	15569	6.2	32	1B	3	C		199		FDE
PALE	03	1715	1755	1859	S12	E23	.398	15563	5.4	104	1B	3	C		221		U F
TEHR	04	0333	0337	0343	S17	E17	.339		5.4	10	SB	1	C		127		FDE
PALE	04	0337E	0339U	0341D	S12	E19	.336		5.6	4D	SB	3	C		91		FDE
MANI	04	0347E	0347U	0350D	S17	E22	.408		5.8	30	SN	3	V		130	1.6	
TEHR	04	0423	0428	0439	N28	E31	.713		6.5	16	SB	1	C		63		UDE
MCMA	04	1411	1418	1428	S14	E08	.192	15570	5.2	17	SF		C	1418	40	.4	E
MCMA	04	1609E		1611D	S09	E07	.130	15570	5.2	2D	SF		P	1609	50	.5	E
MCMA	04	1634	1642	1721D	S15	E14	.281	15570	5.7	47D	SN		C	1642	50	.5	EL
HOLL	04	1640	1640	1652	S13	E13	.250		5.7	12	SN	3	C		35		U F
HOLL	04	1707	1707	1713	S13	E13	.250		5.7	6	SN	3	C		24		FDE
HOLL	05	1337	1407	1446	S13	E 1	.118	15570	5.6	69	1B	3	C		186		U F
MCMA	05	1403E		1428D	S18	E04	.214	15570	5.9	25D	SN		P	1408	150	1.7	BEU
MCMA	05	1403E		1428D	N37	W56	.926	15557	1.4	25D	1F		P	1408	100	2.1	B
HOLL	05	2027	2030	2034	S13	W 4	.135		5.6	7	SN	3	C		28		
HOLL	05	2231	2234	2244	S13	W 5	.145		5.6	13	SN	3	C		33		
HOLL	06	1646	1655	1719	S14	E75	.961		12.3	33	SB	3	C		38		FDE
PALE	06	1714E	1716U	1729	S17	E80	.980		12.7	15D	SB	3	C		39		DE
PALE	07	2200	2222	2227	S14	W31	.521		5.6	27	SN	3	C		78		DE
PALE	08	0121	0123	0124	S14	W33	.549	15570	5.6	3	1B	3	C		185		FDE
TEHR	08	0420E	0423	0441	S12	W34	.559		5.6	21D	SB	2	C		95		
ISTA	08	0835		0840	S15	E65	.901		13.2	5	SF						D
BUCA	08	0835		0850	S16	E65	.901		13.2	15	SN		C	0841	43	1.3	D
TEHR	08	0840E	0841U	0902	S18	E59	.853		12.8	22D	SB	2	C		95		DE
ISTA	08	0855		0858	S14	E56	.824		12.6	3	SF						D
MCMA	08	1342E	1352	1415	S22	W44	.709	15570	5.3	33D	SN		C	1352	50	.8	E
MCMA	08	1439	1440	1447	S22	W44	.709	15570	5.3	8	SF		C	1440	40	.7	E
MCMA	08	1443	1444	1500	S13	E50	.762	15587	12.4	17	SF		C	1444	70	1.2	E
PALE	08	1759	1818	1822	S14	W43	.681		5.5	23	SB	3	C		138		DE
HOLL	08	1815	1817	1820	S13	W43	.680		5.5	5	SB	3	C		125		
PALE	08	1833	1840	1847	S15	E58	.843		13.1	14	SN	3	C		27		DE
PALE	08	1837	1839	1841	S15	E48	.741		12.4	4	SN	3	C		19		DE
PALE	08	1846	1856	1947	S15	E47	.730		12.3	61	SN	3	C		89		DE
HOLL	08	1911	1912	1917	S13	W43	.680		5.6	6	SN	3	C		36		
PALE	08	1912	1914	1945	S14	E45	.705		12.2	33	SB	3	C		141		DE F
PALE	08	2007	2055	2055D	S14	W44	.693	15570	5.5	48D	1B	3	C		358		DE F
PALE	08	2007	2007	2055D	S14	W44	.693	15570	5.5	48D	1N	3	C		211		DE F
HOLL	08	2007	2007	2033	S13	W44	.692		5.5	26	SB	3	C		31		FDE
PALE	08	2018	2019	2051D	S18	E51	.777		12.7	33D	SN	3	C		65		DE
HOLL	08	2054	2055	2103	S13	W44	.692		5.6	9	SB	3	C		54		
HOLL	08	2153	2154	2158	S13	W45	.704		5.5	5	SB	3	C		50		
PALE	09	0001	0004	0009	S14	W46	.717		5.6	8	SB	3	C		128		FDE
TEHR	09	0552	0555	0558	S11	W48	.738		5.6	6	SB	2	C		95		DE F
TEHR	09	0841	0844	0850	S13	W51	.773		5.5	9	SN	2	C		95		U F
MCMA	09	1408	1418	1425	S19	E50	.768	15587	13.3	17	SF		C	1418	40	.7	E
MCMA	09	1529	1531	1535	S12	W59	.852	15570	5.2	6	SF		C	1531	30	.6	D
MCMA	09	1540	1540	1543	S12	W59	.852	15570	5.2	3	SN		C	1540	50	1.0	DV
MCMA	09	1543	1547	1625	S23	W18	.405	15582	8.3	42	SN		C	1547	80	1.0	E
MCMA	09	1552	1553	1617	N20	E68	.950	15589	14.8	25	SN		C	1553	30	.8	EH
MCMA	09	1554	1555	16040	N15	E33	.631	15583	12.1	10D	SF		C	1555	15	.2	DH

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
HOLL	09	1951	2026	2105D	S18	W61	.870	15566	5.3	74D	1B	3	C		155		U F
PALE	09	2010E	2022	2137	S14	W57	.833	15570	5.6	87D	1B	2	C		264		U F
TEHR	10	0451	0455	0500	S11	W48	.738		6.6	9	SB	1	C		95		FDE
TEHR	10	0451	0455	0500	S10	W61	.869		5.6	9	SB	1	C		95		FDE
TEHR	10	0956	1003	1012	N22	E61	.915		15.0	16	SB	2	C		127		UDE
MONT	10	1001	1002	1024	N20	E57	.883		14.7	23	SN		C	1002	60		E
MONT	10	1009	1024	1100D	S13	W70	.934		5.2	51D	SN		C	1024	80		E
TEHR	10	1030	1034	1045	S11	W64	.893		5.6	15	SB	2	C		95		FDE
MCMA	10	1321E		1353	S20	E65	.901	15591	15.4	32D	SN		C	1350	50	1.5	EK
MCMA	10	1535E	1542	1600D	S18	E64	.893	15591	15.4	25D	SF		C	1542	20	.5	E
MCMA	10	1607	1607	1608D	S11	W70	.935	15570	5.4	1D	SN		C	1607	20	.8	OV
MCMA	10	1610	1615	1622D	S18	E64	.893	15591	15.5	12D	SN		C	1615	15	.3	E
PALE	10	1734	1815	1858D	S24	W32	.576		8.3	84D	SB	3	C		127		FDE
MCMA	10	1750	1752	1758	S18	E64	.893	15591	15.5	8	SF		C	1752	20	.7	E
MCMA	10	1917	1918	1922	S22	W36	.616	15582	8.1	5	SF		C	1918	40	.6	E
PALE	10	2153	2153	2200D	S24	W34	.601		8.4	7D	SB	3	C		56		FDE
HOLL	10	2153	2154	2202	S24	W35	.613		8.3	9	SN	3	C		52		F
MONT	11	0836	0850	0956	S19	E32	.552		13.8	80	2B		C	0850	600		
HERS	11	0838E	0845	0907	S19	E40	.653	15587	14.4	29D	1F		P	0845	202	2.6	U
BUCA	11	0840	0848	0900D	S20	E33	.569	15587	13.8	20D	1N		C	0848	322	4.4	
TEHR	11	0843	0850	0938	S20	E30	.530	15587	13.6	55	2B	1	C		572		HDE
RAMY	11	1143E	1145U	1151	S19	E13	.304		12.5	8D	SB	2	C		28		F
WEND	11	1143		1157	S19	E11	.282		12.3	14	SF		V				
RAMY	11	1240E	1242U	1252	S19	E52	.788		15.4	12D	SB	3	C		36		
MCMA	11	1451E	1453	1555	S15	E13	.263	15587	12.6	64D	SN		C	1453	30	.3	D
RAMY	12	1156	1158	1212	S14	W90	1.000		5.7	16	SB	2	C		0		
RAMY	12	1322E	1324	1336	S18	E21	.397		14.1	16D	SB	3	C		40		F
WEND	12	1323E		1340	S19	E22	.418		14.2	17D	SN		P				E
MCMA	12	1325E		1342D	S19	E20	.391	15587	14.1	17D	SB		C	1326	90	1.1	E
MCMA	12	1325E		1330	S16	E36	.594	15591	15.3	5D	SF		C	1326	20	.3	D
MCMA	12	1440	1445	1455D	S11	W90	1.000	15570	5.9	15D	1B		C	1445			
RAMY	12	1442	1447	1452	S14	W90	1.000	15582	5.9	10	1B	3	C		0		
MCMA	12	1606	1609	1620	S23	E38	.643	15595	15.5	14	SN		C	1609	80	1.2	EL
HOLL	12	1607	1609	1615	S16	E37	.607		15.4	8	SN	3	C		83		U F
MCMA	12	1624	1629	1641	S21	W60	.863	15582	8.2	17	SN		C	1629	60	1.5	E
HOLL	12	1839	1845	1854	N22	W45	.794		9.4	15	SB	3	C		46		F
TEHR	13	0341	0345	0351	S23	W60	.864		8.7	10	SB	1	C		95		FDE
TEHR	13	0448	0451	0456	S23	W60	.864		8.7	8	SB	1	C		64		FDE
TEHR	13	0543	0547	0607	S16	W11	.245	15587	12.4	24	1B	1	C		254		U F
ISTA	13	0700E		0706	N16	W15	.456		12.2	6D	SN						D
TEHR	13	0729	0737	0743	S23	W61	.872		8.7	14	SB	2	C		95		FDE
MONT	13	0804	0808	0817	S22	W69	.927		8.2	13	SF		C	0808	60		E
TEHR	13	0836	0840	0846	S23	W61	.872		8.8	10	SB	2	C		95		FDE
TEHR	13	1155	1200	1206	S16	E11	.245		14.3	13	SB	1	C		159		FDE
WEND	13	1155		1204	S16	E00	.161		13.5	9	SN		V				
WEND	13	1158		1210	N17	W19	.504		12.1	12	SF		V				E
TEHR	13	1233	1246	1247D	S16	E10	.233	15587	14.3	14D	2B	1	C		509		U U
WEND	13	1236	1248	1344	S17	W01	.179	15587	13.5	68	2N		P		800	8.6	U
RAMY	13	1236E	1239U	1358D	S20	E 3	.235	15587	13.8	82D	1B	3	C		280		U F
HERS	13	1244E	1244D	1347	S20	E10	.283	15587	14.3	63D	1B		P	1251	317	3.5	U
HOLL	13	1409	1411	1423	S19	E 4	.223		13.9	14	SN	2	C		82		DE
WEND	13	1409		1420	S19	E07	.242		14.1	11	SF		V				E
RAMY	13	1410E	1412U	1431D	S20	E 5	.244		14.0	21D	SB	3	C		48		F
TEHR	14	0521	0524	0530	S15	W 2	.147		14.1	9	SB	1	C		95		UDE
MCMA	14	1533E		1616D	S17	W31	.529	15587	12.3	43D	SN		C	1546	70	.9	E
HOLL	14	2110	2113	2122	S20	E32	.555		17.3	12	SN	3	C		91		
PALE	14	2112E	2113	2125	S21	E27	.496		16.9	13D	SB	3	C		73		FDE
HOLL	14	2342	2344	2353D	S24	W87	.995		8.5	11D	SB	3	C		0		F
PALE	14	2343	2345	2348	S21	W84	.990		8.7	5	SN	3	C		12		DE
MANI	14	2346E	2348U	2353D	S20	W90	.999		8.2	7D	SN	3	V				
PALE	15	0250	0255	0258	N21	W10	.492		14.4	8	SN	3	C		53		F
TEHR	15	0310E	0400	0415	S21	W90	.999	15599	8.4	65D	1B	1	C		127		
TEHR	15	0350E	0400	0415	S21	W90	.999	15599	8.4	25D	1B	1	C		127		
MANI	15	0353E	0356	0410D	S20	W90	.999	15603	8.4	17D	1B	3	V				
TEHR	15	0856E	0900	0906	N21	W 9	.488		14.7	10D	SN	1	C		127		U U
TEHR	15	1015	1019	1022	S19	E25	.457		17.3	7	SB	1	C		64		FDE

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
TEHR	15	1125E	1130	1137	S17	E25	.445		17.4	12D	SB	1	C		127		FDE
HOLL	15	1608	1608	1624	S19	W25	.457		13.8	16	SB	3	C		121		
HOLL	15	1831	1833	1859	S22	W27	.502	15587	13.7	28	1N	3	C		291		U F
PALE	15	1831	1833	1905	S20	W35	.593	15587	13.1	34	1B	3	C		390		U F
PALE	15	1831	1833	1834D	S20	W27	.490	15587	13.7	3D	2B	3	V		487		
RAMY	15	1831E	1834	1910D	S20	W33	.568	15587	13.3	39D	1B	3	C		250		F
HOLL	15	2024	2025	2030	N16	W50	.814		12.1	6	SN	3	C		24		F
HOLL	15	2052	2054	2104	N33	E61	.941		20.4	12	SB	3	C		27		F
HOLL	15	2059	2059	2105	N16	W51	.823		12.0	6	SN	3	C		19		F
MANI	16	0043E	0044	0050	N30	E64	.948	15598	20.8	7D	2N	3	V		300	6.0	
ISTA	16	0737E		0742	S22	E04	.269	15591	16.6	5D	2N						F
BUCA	16	0740	0741	0751	S21	E02	.246		16.5	11	SN		C	0741	171	2.8	
TEHR	16	0740E	0745	0749	S20	E 9	.272		17.0	9D	SB	1	C		95		FDE
TEHR	16	0807E	0809	0811	S18	W32	.546		13.9	4D	SB	1	C		65		FDE
ISTA	16	0808E		0813	S20	W34	.580		13.8	5D	SN						D
TEHR	16	0941	0950	0956	N26	E58	.907		20.8	15	SB	1	C		95		FDE
MCMA	16	1535	1536	1541D	N28	E55	.895	15598	20.8	6D	SN		C	1536	50	.9	D
HOLL	16	1538	1539	1542	N33	E51	.889		20.5	4	SN	3	C		27		
MCMA	16	1645E	1652	1734D	S18	W36	.599	15587	14.0	49D	SN		C	1652	80	1.1	EH
HOLL	16	1650	1741	1817	S22	W40	.661	15587	13.7	87	1B	3	C		318		U F
RAMY	16	1650E	1653	1715	S20	W34	.580		14.2	25D	SB	3	C		50		F H
PALE	16	1704	1706	1718	S20	W39	.643		13.8	14	SN	3	C		59		DE
PALE	16	1734	1741	1813	S21	W40	.658	15587	13.7	39	1B	3	C		229		U F
MCMA	16	1751E		1815D	S18	W37	.612	15587	14.0	24D	1B		C	1751	150	2.1	E
HOLL	16	1943	1944	1953	S22	W40	.661		13.8	10	SB	3	C		77		U F
HOLL	16	2142	2145	2159	N33	E48	.871	15598	20.5	17	1B	3	C		369		U F
PALE	16	2145E	2145U	2158	N31	E46	.848	15598	20.4	13D	1B	3	C		337		FDE
HOLL	16	2333	2335	0001	N36	E47	.879		20.5	28	SB	3	C		57		
PALE	16	2334	2341	0006D	N31	E47	.855		20.5	32D	SN	2	C		87		FDE
PALE	17	0022	0022	0025	S21	W43	.693		13.8	3	SN	2	C		22		DE
ISTA	17	0656E		0715D	S21	W42	.681		14.1	19D	SN						F
TEHR	17	0705E	0705U	0725D	S20	W40	.655		14.3	20D	SB	1	C		95		DE
ISTA	17	0710E		0722D	S20	W45	.713		13.9	12D	SN						F
MCMA	17	1321	1330	1402	S18	W48	.743	15587	14.0	41	SN		C	1330	80	1.3	E
RAMY	17	1352E	1355	1403	N31	E61	.937		22.2	11D	SB	3	C		32		F
MCMA	17	1413	1420	1445	N30	E42	.816	15598	20.7	32	SN		C	1420	30	.4	D
MCMA	17	1740E	1740	1754	S18	W52	.786	15587	13.8	14D	SN		C	1740	50	1.0	D
RAMY	17	1741E	1744	1748	S18	W50	.765		14.0	7D	SB	3	C		24		
RAMY	17	1751E	1756	1802	N13	W11	.386		16.9	11D	SN	3	C		20		
MCMA	17	1902	1925	1941D	S17	W49	.753	15587	14.1	39D	SF		C	1925	50	.9	E
HOLL	17	2035	2040	2044	N20	W46	.795		14.4	9	SN	3	C		21		
HOLL	17	2138	2139	2144	N20	E28	.623		20.0	6	SN	3	C		46		U
HOLL	17	2211	2221	2241	S22	W55	.820		13.8	30	SB	3	C		43		DE
PALE	17	2334	2353	0006D	N31	E47	.855		21.5	32D	SF	2	C		44		FDE
HOLL	18	0002	0004	0012D	S22	W56	.829		13.8	10D	SB	2	C		82		F
RAMY	18	1716	1720	1739	N31	E25	.705		20.6	23	SB	3	C		64		
MCMA	18	1717E		1735D	N29	E24	.679	15598	20.5	18D	SN		C	1720	60	.7	E
HOLL	18	1719	1720	1731	N31	E23	.693		20.4	12	SN	3	C		23		
PALE	18	2141	2148	2349	N31	E22	.687		20.6	128	SN	3	C		85		F
PALE	18	2141	2204	0039D	S28	E32	.600	15604	21.3	178D	1B	3	C		297		U
PALE	18	2146	2146	2154	S21	W25	.469		17.0	8	SB	3	C		29		DE
PALE	18	2222	2247	2340	S21	W29	.521		16.8	78	SB	3	C		49		DE
PALE	19	0104	0113	0132	S21	W30	.533		16.8	28	SB	3	C		58		DE
PALE	19	0133	0135	0140	N19	W61	.910		14.5	7	SN	3	C		35		DE
BUCA	19	0705		0735	N28	E74	.983		24.8	30	SF		C	0715	32		D
TEHR	19	0747	0751	0811	N29	E65	.951	15610	24.2	24	1B	1	C		159		F
BUCA	19	0750	0751	0803	N28	E74	.983	15610	24.9	13	1N		C	0751	107		
RAMY	19	1113	1113	1117	N27	E65	.948		24.3	4	SN	2	C		19		
RAMY	19	1149	1154	1225	N27	E65	.948		24.4	36	SB	3	C		87		F
RAMY	19	1204	1211	1225	N20	W67	.946		14.5	21	SB	3	C		21		
RAMY	19	1308	1321	1440	S22	W36	.613		16.8	92	SB	3	C		127		
RAMY	19	1407	1438	1519	N26	E65	.946		24.5	72	SB	3	C		65		
HOLL	19	1606	1610	1625	N27	E68	.961	15610	24.8	19	1B	3	C		120		DE
RAMY	19	1606	1608	1632	N26	E65	.946	15610	24.5	26	1B	3	C		112		DE
PALE	19	1708	1709	1800	S21	W39	.646		16.8	52	SB	3	C		57		DE
PALE	19	1755	1756	1807	N28	E65	.950		24.6	12	SB	3	C		25		DE
PALE	19	1958E	2011U	2021	S21	W41	.669		16.8	23D	SN	3	C		64		DE
PALE	19	2211E	2212	2243D	S21	W42	.681	15591	16.8	32D	1B	2	C		193		FDE

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
MANI	20	0128E	0128U	0135D	S20	W42	.678		16.9	7D	SN	3	V		100	1.8	F
PALE	20	0201	0201	0209D	S28	E15	.428		21.2	8D	SB	3	C		108		FDE
PALE	20	0203	0203	0207	N32	E 7	.637		20.6	4	SN	3	C		22		FDE
PALE	20	0315E	0316U	0333D	N28	E57	.908		24.4	18D	SN	3	C		92		DE
TEHR	20	0719	0723	0733	S23	W41	.676		17.2	14	SB	2	C		127		
MCMA	20	1555	1557	1619	S22	W53	.800	15591	16.7	24	SN		C	1557	60	1.2	E
MCMA	20	1638	1706	1722	S20	W55	.817	15591	16.6	44	SB		C	1706			
MCMA	20	1638	1640	1722	S20	W55	.817	15591	16.6	44	SB		C	1640	50	1.1	EK
MCMA	20	1745	1749	1757	S20	W55	.817	15591	16.6	12	SB		C	1749	50	1.1	E
MCMA	20	1754	1756	1808	S31	E06	.417	15604	21.2	14	SN		C	1756	40	.5	E
PALE	20	1754E	1757	1804	S28	E 7	.375		21.3	10D	SN	3	C		31		DE
HOLL	20	1810	1813	1819	S22	W51	.781		16.9	9	SN	3	C		51		
PALE	20	1840	1843	1847	S23	W54	.811		16.7	7	SN	3	C		31		DE
PALE	20	2010	2014	2050D	S23	W55	.820	15591	16.7	40D	1B	3	C		151		DE F
PALE	20	2020	2023U	2049D	N28	E48	.849		24.4	29D	SB	3	C		79		DE
HOLL	20	2138	2154	2159	S22	W53	.800		16.9	21	SN	3	C		18		DE
HOLL	20	2138	2144	2159	S22	W53	.800	15591	16.9	21	1B	3	C		185		DE
MANI	21	0300E	0300U	0314D	N27	E45	.822		24.5	14D	SN	3	V		100	1.5	F
RAMY	21	1318	1336	1341	N15	E10	.409		22.3	23	SN	3	C		28		
RAMY	21	1324	1358	1500	S23	W67	.914	15591	16.5	96	1B	3	C		194		FDE
MCMA	21	1337	1341	1430D	N32	W08	.640	15598	21.8	53D	SN		C	1341	30	.3	D
MCMA	21	1407E		1423D	S24	W70	.933	15591	16.3	16D	1N		C	1413	80	3.0	BE
MCMA	21	1423E	1432	1453	S32	W05	.429	15604	21.2	30D	SN		C	1432	35	.4	E
MCMA	21	1551	1620	1725D	N32	W11	.648	15598	20.8	94D	1N		C	1620	200	2.4	
MCMA	21	1551	1602	1725D	N32	W11	.648	15598	20.8	94D	1N		C	1602	175	2.1	EU
RAMY	21	1553	1601	1659	N29	W13	.618	15598	20.7	66	1B	3	C		250		F
RAMY	21	2028E	2031	2038	N19	E90	1.001		28.6	10D	SB	3	C		0		
TEHR	22	0602	0606	0638	S22	E20	.413		23.8	36	SB	2	C		150		H
ISTA	23	0850		0907D	S15	E90	.999		2.1	17D	SN						A
MANI	24	0649E	0650	0653D	S17	E65	.899		1.2	4D	SF	3	V		50	1.0	
MCMA	24	1650	1651	1707D	N23	E04	.506	15610	25.0	17D	SF		C	1651	40	.4	E
PALE	24	2016	2017	2025	N24	E 2	.518		25.0	9	SB	3	C		115		FDE
MANI	25	0206E	0206U	0218D	N28	W06	.582		24.6	12D	SN	3	V		80	.9	
MONT	25	1046	1047	1051	N24	W06	.525		25.0	5	SN		C	1047	70		
TEHR	25	1146	1149	1227	S16	E70	.933		2.7	41	SB	2	C		95		
TEHR	25	1155E	1157U	1235	S10	E90	1.000	15620	4.2	40D	2B	2	C		318		
PALE	25	2347	2349	2355	N27	W62	.934		21.3	8	SN	2	C		61		DE
PALE	26	1931E	1932U	2005D	S17	E48	.741		2.4	34D	SB	3	C		71		DE
MCMA	27	1718	1722	1743	N18	E18	.512	15619	1.1	25	SN		C	1722	80	1.0	E
PALE	27	1726E	1726U	1740	N19	E14	.494		28.8	14D	SN	1	C		98		
PALE	27	2037	2038	2050D	N19	E12	.481		28.8	13D	SB	2	C		186		FDE
PALE	27	2112	2116	2117	N19	E12	.481		28.8	5	SN	3	C		23		FDE
PALE	27	2229	2232	2300	S19	E26	.468	15620	1.9	31	1B	3	C		216		DE F
TEHR	28	0425	0430	0436	S15	W30	.506		25.9	11	SB	4	C		64		FDE
TEHR	28	0528E	0528U	0543	N18	E10	.455		1.0	15D	SB	4	C		159		FDE
MONT	28	0938	0940	0946	N19	E08	.460		1.0	8	SN		C	0940	80		E
TEHR	28	0940	0943	0947	N18	E10	.455		1.2	7	SB	1	C		190		FDE
HOLL	28	1557	1604	1655	N20	E 1	.457	15619	28.7	58	2B	3	C		612		U F
HOLL	28	2011	2013	2024	N23	W58	.900		24.5	13	SB	4	C		61		F
HOLL	28	2318	2326	2351	N18	W 4	.431		28.7	33	SN	2	C		100		F
PALE	28	2320	2328	2351	N18	E 1	.426		1.0	31	SB	3	C		165		DE
MANI	28	2333E	2333U	2347D	N19	W02	.443		28.8	14D	SN	2	P		150	1.5	F
RAMY	29	1323E	1325	1339	N21	W13	.515		28.6	16D	SB	2	C		26		
RAMY	29	1402	1405	1414	N21	W15	.527		28.5	12	SB	3	C		68		F
RAMY	29	1537	1539	1544	S 9	E52	.782		5.6	7	SF	3	C		19		F
RAMY	29	1624	1629	1701	S18	E 1	.188		1.8	37	SB	3	C		78		F
MCMA	29	1624	1628	1655	S20	E04	.231	15620	2.0	31	SN		C	1628	30	.3	D
HOLL	29	1627	1629	1641	S18	E 1	.188		1.8	14	SN	3	C		28		F
RAMY	29	1744	1746	1755	N18	W13	.474		28.8	11	SN	3	C		28		
MONT	30	0815	0818	0826	S16	W62	.876		25.7	11	SN		C	0818	100		
RAMY	30	1252	1255	1300D	S17	W66	.906		25.6	8D	SB	4	C		74		
MCMA	30	1821	1825	1907	S26	W24	.494	15621	1.0	46	SF		C	1825	75	1.0	E

Hα SOLAR FLARES

OCTOBER 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	NOAA PLAGE REGION	CMP DAY			COND.	TYPE	TIME — UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
MONT	31	0905	0913	0937D	N19	W34	.676		28.8	32D	SN		C	0913	220		
MONT	31	1027	1033	1100D	S28	W31	.587		1.1	33D	1N		C	1033	250		
WEND	31	1034E		1058	S26	W30	.562		1.2	24D	SN		P				L
MCMA	31	1332	1335	1358	N20	W36	.703	15619	28.9	26	SN		C	1335	40	.5	E
MCMA	31	1644	1647	1659	N18	W34	.669	15619	1.1	15	SF		C	1647	50	.6	E
MCMA	31	1720	1725	1735	N18	W34	.669	15619	1.2	15	SF		C	1725	50	.6	E
MCMA	31	1929	1934	1945	S29	E56	.838	15635	8.0	16	SF		C	1934	40	1.0	E

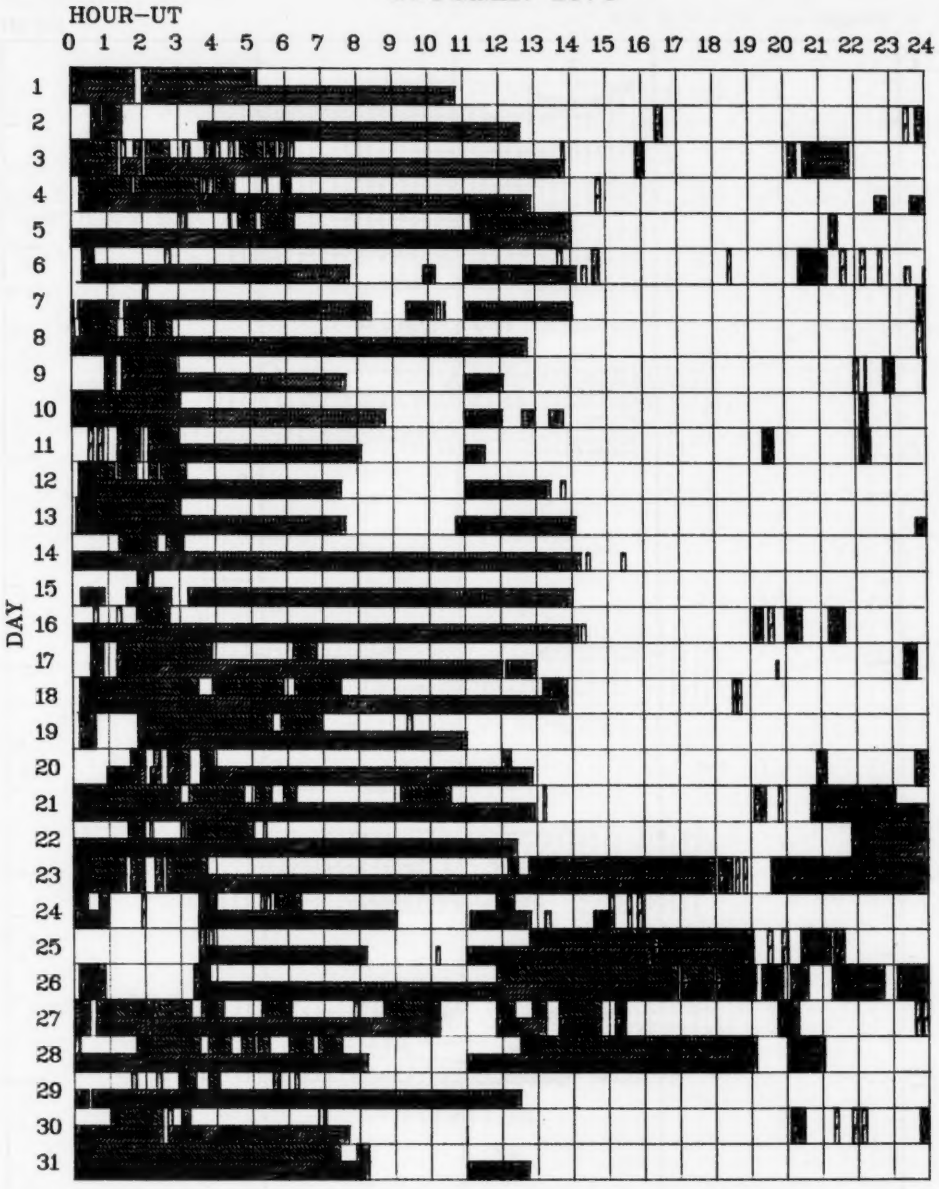
"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

OCTOBER 1978



Observatories included in total patrol:

Athenes	Holloman	Manila	Monte Mario	Ramey	Upice
Bucharest	Istanboul	McMath-Hulbert	Palehua	Tehran	Wendelstein
Herstmonceux	Kandilli				

Times of no flare patrol are shown by the shaded area for each day, divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

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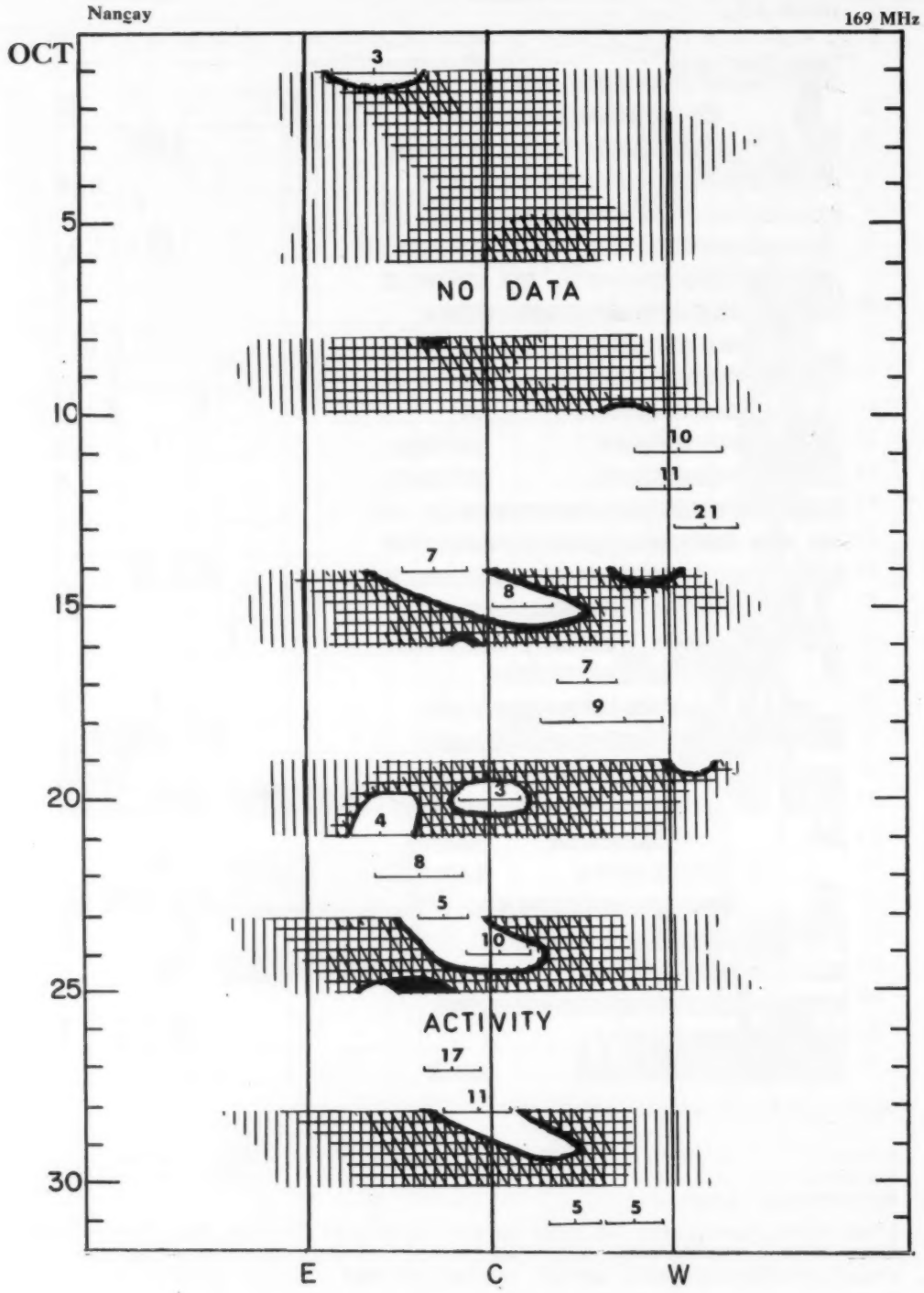
Oct 78

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

OCTOBER 1978

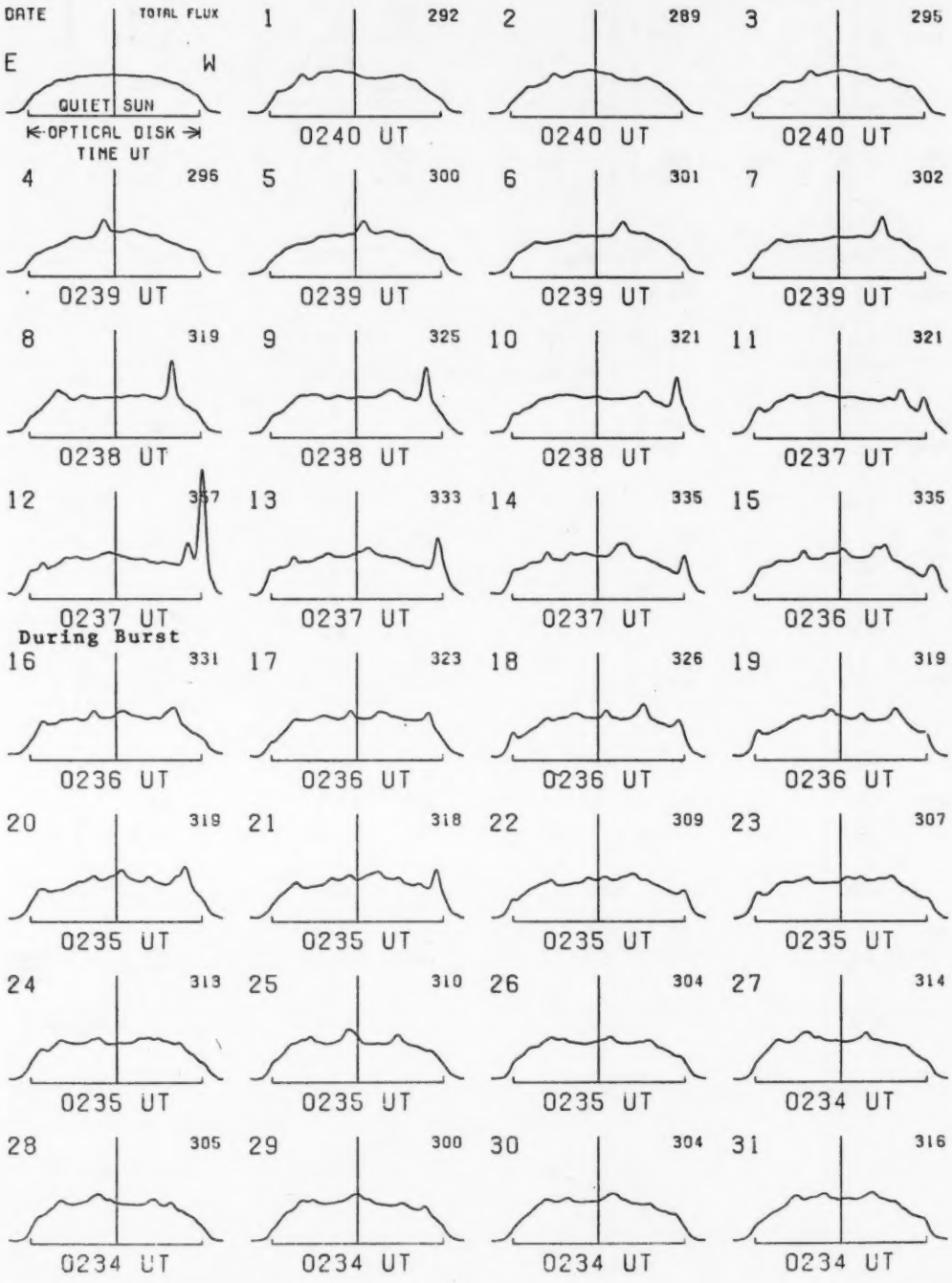


EAST-WEST SOLAR SCANS

OCTOBER 1978

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



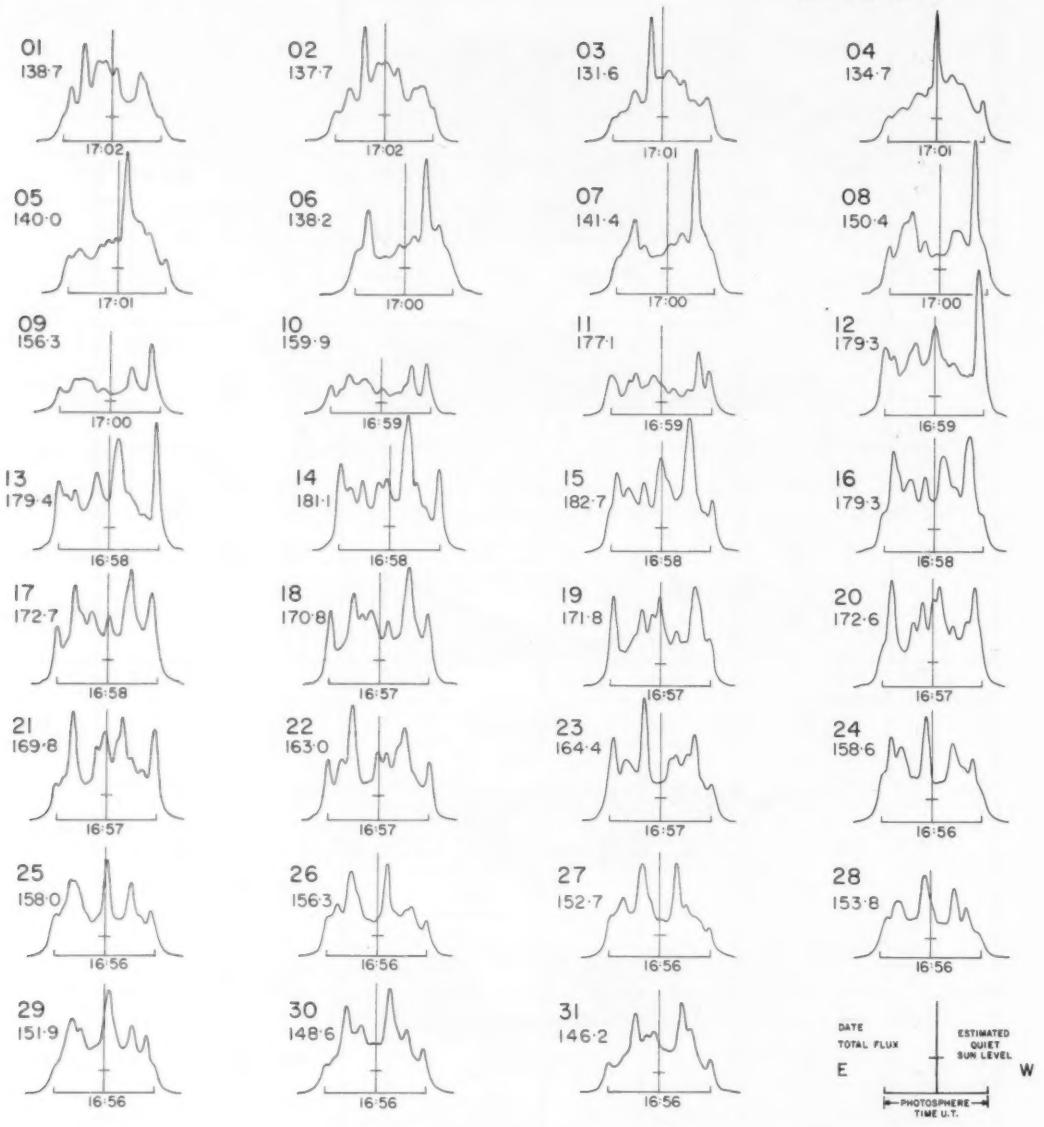
22
Oct 78

EAST-WEST SOLAR SCANS

OCTOBER 1978

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

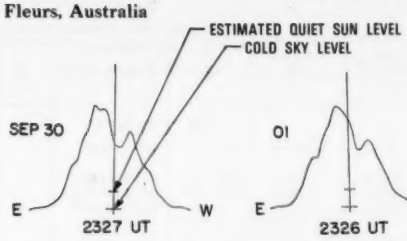


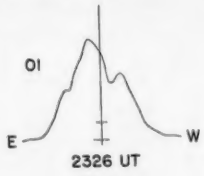
EAST-WEST SOLAR SCANS

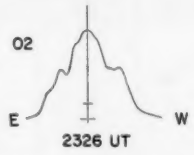
OCTOBER 1978

Fleurs, Australia

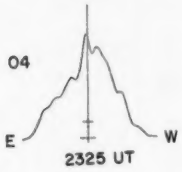
21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

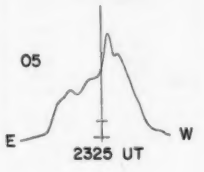


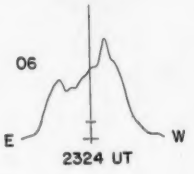


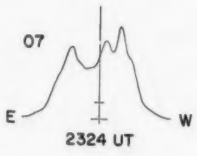


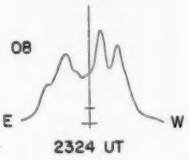
03 NO DATA











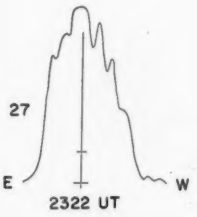
09 10 11

NO DATA OCT 9-26, 1978

12 13 14 15

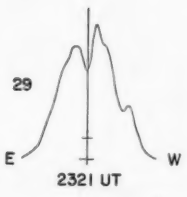
16 17 18 19

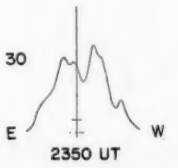
20 21 22 23



24 25 26

28 NO DATA





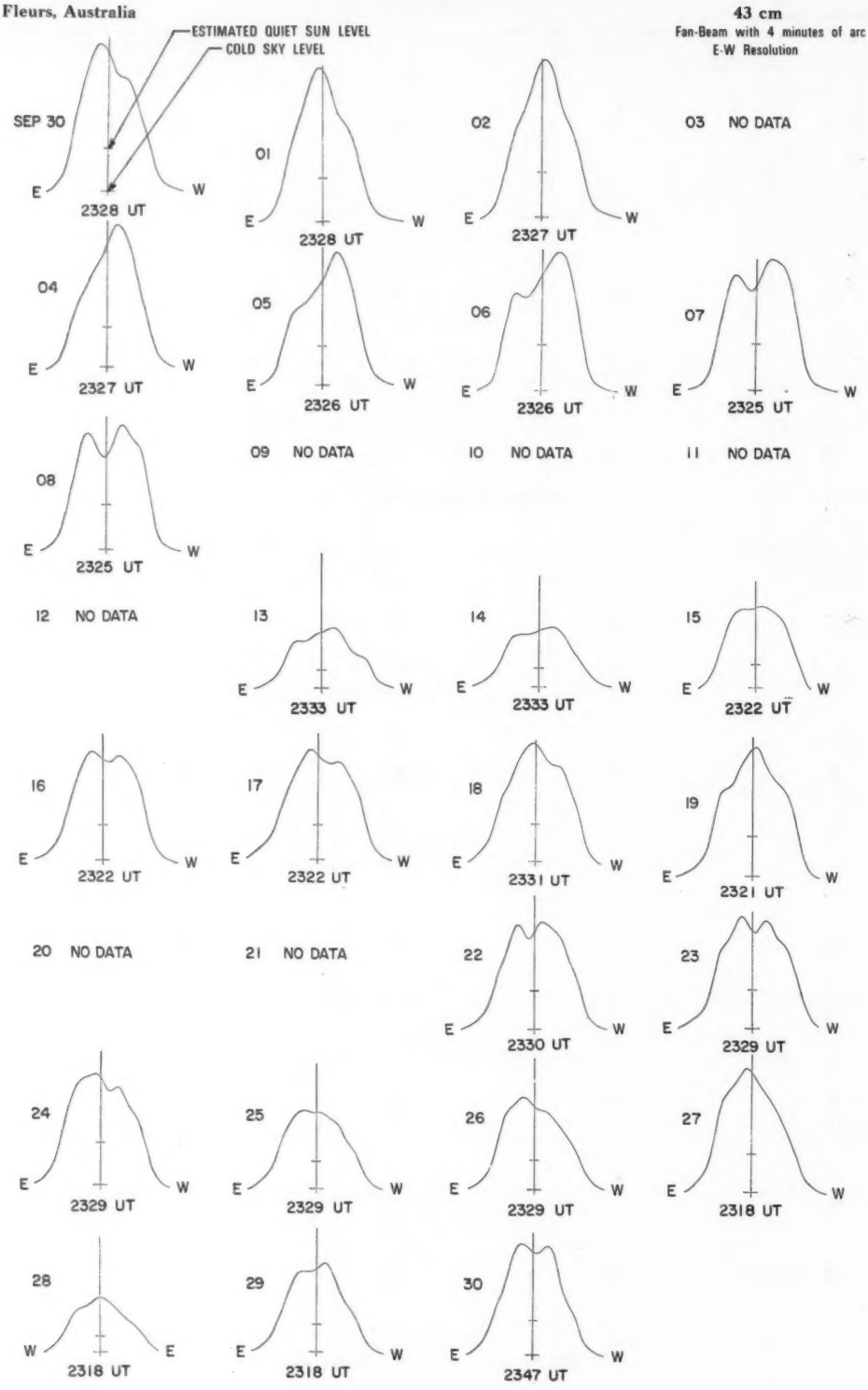
EAST-WEST SOLAR SCANS

OCTOBER 1978

Fleurs, Australia

43 cm

Fan-Beam with 4 minutes of arc E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

OCTOBER 1978

OCT 1978	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
1	8800	MANI	4 S/F	0717.1	0719.5	14.1	201.6	67.2		NT
3	2800	OTTA	21 GRF	1420	1429	120	4	2		
	2800	OTTA	45 C	1423	1427	5.5	3.8	1.8		
	2695	SGMR	3 S	1522.1	1523.3	2.9	16.7	6.7		
	2800	OTTA	240 R	1700	1715	15	3.6	1.8		
	2800	OTTA	40 F	1753	1802.5	35	7.6			
	2800	OTTA	20 GRF	1940	1955	35	1.4	.7		
4	2800	OTTA	1 S	1528	1529	2	1.4	.7		
	2800	OTTA	23 GRF	1630	1655	70	4	2		
	2800	OTTA	1 S	1638	1641	10	5	1.8		
	2695	BOUL	1 S	1639	1641.5	7.5	7	2		
	2695	PENT	20 GRF	2250	2330	60	2.4	1.4		
5	2695	MANI	3 S	0631.5	0632.2	1.8	73.8	24.6		
	8400	BERN	3	0631.6	0632.5	4	27			OPR
	2800	OTTA	21 GRF	1250	1342	280	12.5	4.9		
	2800	OTTA	1 S	1303.5	1304	2	2.4	1		
	2800	OTTA	4 S/F	1402.2	1405	28	92	24		
	8400	BERN	20	1403	1405.6	57	36			OPR
	8800	SGMR	3 S	1403.1	1405.2	16.9	27.3	10.9		3S,SWF
	2695	SGMR	3 S	1403.3	1405.3	20.7	106	42.4		3S,SWF
	2695	BOUL	20 GRF	1403.5E	1406	24.5U	93	31		
	2800	OTTA	1 S	1942	1944	4	2.8	1		
	2800	OTTA	1 S	1948	1949.2	3	9.2	2		
	2695	PENT	20 GRF	2220	2235	70	2.4	1.6		
6	2800	OTTA	20 GRF	1310	1323	40	2.8	1.4		
	2800	OTTA	27A RF	1455		250	2	1.7		
	2800	OTTA	24 R	1455	1515	20	2	1		
	2800	OTTA	24P R	1515		205	2			
	2800	OTTA	3 S	1642.8	1644.5	5	12.4	9.8		
	2800	OTTA	30 PBI	1647.8	1647.8	25	39	14.2		
	2800	OTTA	2 S/F	1652.5	1655	8	5.6	2.8		
	2695	SGMR	3 S	1652.5	1655.1	9.5	36	14.4		3S,SWF
	8800	SGMR	3 S	1652.5	1654.7	9.5	91.3	36.5		3S,SWF
	2800	OTTA	26 FAL	1840	1905	25	-2	-1		
	2800	OTTA	3 S	2119.7	2120	1	27	7		
7	2800	OTTA	240 R	1510	1630	40	2.4	1.2		
	2800	OTTA	1 S	1732	1735	6	1	.5		
	2695	PENT	240 R	1910	2135	145	6.2	3.1		
	2695	PENT	20 GRF	2205	2212	55	2	1		
8	2695	MANI	4 S/F	0834.8	0835.7	3	50.4	16.8		
	8800	MANI	4 S/F	0834.8	0835.8	2.4	74.9	25		I
	2800	OTTA	20 GRF	1310		50 D	1.8			
	2300	OTTA	21 GRF	1437	1515	70 D	2.6			
	2800	OTTA	1 S	1441.5	1443	3	1.4	.6		
	2800	OTTA	1 S	1836.5	1837.5	1.5	1.6	.8		
	2800	OTTA	21 GRF	1845	2100	360 D	18.2			
	2695	PENT	1 S	2017	2017.5	1.5	2.6	1.3		
	2695	PENT	3 S	2425	2425.8	4	37.6	9.4		
9	8900	BERN	4	1130.7	1131	.9	21			
	8400	BERN	4	1130.7	1131	.9	23			
	2300	OTTA	1 S	1247	1250	5	1.4	.7		
	2800	OTTA	20 GRF	1540	1600	100	2.4	1.2		
	2800	OTTA	20 GRF	1800	1835	95	2.2	1.6		
	2800	OTTA	2 S/F	1939.2	1939.5	1.5	1.2			
	2800	OTTA		1945	1951	11.5	108			
	2800	OTTA	45 C	1945	2023.5	62	140	73		
	2695	BOUL		1949.5E	2033		201	67		
	2695	BOUL		1949.5E	2024.5		209	70		
	2695	BOUL	21 GRF	1949.5E	2016.5	84.5D	209	70		
	2695	BOUL		1949.5E	2002.5		177	59		
	2695	BOUL		1949.5E	1952		177	59		
	8800	SGMR	45 C	1949.6	2015.5		195			2,CONT,SWF
	8800	SGMR	45 C	1949.6	2001.8		220			2,CONT,SWF
	8800	SGMR	45 C	1949.6	1951.2	60.4	415	166		2,CONT,SWF
	2695	SGMR	45 C	1950.2	1951.2	59.1	128	66.4		2,CONT,SWF
	2695	SGMR	45 C	1950.2	2015.5		166			2,CONT,SWF
	2695	SGMR	45 C	1950.2	2001.8		134			2,CONT,SWF
	2800	OTTA		1956.5	2001.9	11.5	108			
	2800	OTTA		2008	2015.5	12	137			
	2800	OTTA		2020	2023.5	27	140			
	2800	OTTA	30 PBI	2047	2047	170	18.2	8.2		
	2800	OTTA	20 GRF	2057	2102	16	14.6	7		
10	8400	BERN	3	0915.1	0916.6	8	12			
	8400	BERN	45	1007	1010.7	12	48			
	8400	BERN	20	1028.1	1034.5	62	21			
	2800	OTTA	23 GRF	1230	1320	260	3.2	1.6		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

OCTOBER 1978

OCT 1978	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22}Wm^{-2}Hz^{-1}$ PEAK	FLUX DENSITY $10^{-22}Wm^{-2}Hz^{-1}$ MEAN	INT	REMARKS
	2800 OTTA	1 S	1442	1443	2	1.2	.6		
	2800 OTTA	1 S	1533	1533.7	1	2.2	1.1		
	2300 OTTA	240 R	1810	1845	35	3.2	1.6		
	2900 OTTA	1 S	1910	1912	6	7	2		
	2800 OTTA	20 GRF	1943	1950	20	2.6	1.3		
	2800 OTTA	20 GRF	2010	2030	40	1.6	.8		
	2695 PENT	22 GRF	2118	2220	110	3.6	1.8		
11	8400 BERN	20	0822.5	0900.3	90	17			OPR
	8900 BERN	20	0822.5	0900.3	90	16			OPR
	2800 OTTA	20 GRF	1350	1530	280	10.2	6.1		
	2695 PENT	20 GRF	2055	2112	95	2.2	1.1		
	2695 PENT	1 S	2308.8	2309.3	1	4.6	2.3		
12	2800 OTTA	20 GRF	1320	1325	30	1.6	.8		
	8400 BERN	3	1438.7	1439.2	1.5	22			
	2800 OTTA	1 S	1454	1456	6	4	2		
	2800 OTTA	22 GRF	1533	1537.5	22	13	6.5		
	2300 OTTA	27 RF	1835		140	3.2	2.9		
	2800 OTTA	24 R	1835	1843	8	3.2	1.1		
	2800 OTTA	24P R	1843		112	3.2			
	2800 OTTA	26 FAL	2035	2055	20	-3.2	-1.6		
	2695 PENT	1 S.	2256	2257	2	3.2	2.2		
13	2695 MANI	4 S/F	0539.2	0541.7	5.7	15.5	5.2		
	8400 BERN	20	0758.2	0804	58	15			
	8400 BERN	3	1157.4	1158.1	5	45			
	8800 SGMR	3 S	1157.4	1158.2	2.6	60	18		
	2695 SGMR	3 S	1158	1158.8	8	77	23.1		
	2800 OTTA	45 C	1234	1237.8	14	220			
	8400 BERN	4	1235.5	1238	75	490			
	2695 SGMR	3 S	1235.6	1236.5	24.4	384	150		3G,4,CONT,
	8400 SGMR	3 S	1235.6	1238.1	25.8	492	200		3G,4,CONT,
	2800 OTTA	29 PBI	1248	1248	112	17.2	6.4		
	2800 OTTA	1 S	1645	1646	5	1.6	.8		
	2800 OTTA	20 GRF	1920	1955	135	8.6	4.4		
	2800 OTTA	1 S	2130.3	2130.6	1	6	2.8		
14	8400 BERN	3	0648.5	0651.1	6	78			
	8900 BERN	3	0648.5	0651.1	6	62			
	2695 MANI	3 S	0650	0651	3	29.4	9.8		
	8400 BERN	3	1244.4	1246	4	19			
	8900 BERN	3	1244.4	1246	4	18			
	2800 OTTA	1 S	1245	1246.8	7	3.4	1.5		
	2800 OTTA	240 R	1435	1540	65	6.6	3.3		
	2800 OTTA	20 GRF	1840	1935	100	4.2	2.1		
	2800 OTTA	21 GRF	2105	2150	130	6.6	3.6		
	2800 OTTA	40 F	2108	2101	3.2	24			
	2695 MANI	4 S/F	2332.2	2334	7.6	65.6	21.8		
	2695 SCUL		2332.5E	2335.5		91	30		
	2695 SCUL	45 C	2332.5E	2334	11 0	91	30		
	8800 MANI	4 S/F	2332.7	2335.1	7.3	182.4	60.8		
	2695 PENT	4 S/F	2332	2334.8	12	68	22.6		
15	8400 BERN	23	0931.1	1028.1	110	24			
	2800 OTTA	3 S	1607.5	1608.1	4.5	42	10		
	2695 SCUL	3 S	1608 E	1609	1.5D	16	5		
	2695 SCUL	29 PBI	1609.5	1609.5	3.5D	11	4		
	2800 OTTA	29 PBI	1612	1612	78	3.4	1.7		
	2800 OTTA	21 GRF	1829	1840	75	12.4	6.2		
	2800 OTTA	40 F	1830.5	1833.5	3	10.2			
	2800 OTTA	1 S	1949	1950	2	2.4	1.7		
	2800 OTTA	20 GRF	2005	2056	85	4.6	2.2		
16	2800 OTTA	1 S	1446.5	1448	10	2.2	1		
	2800 OTTA	20 GRF	1650	1651.5	15	3	1.5		
	2800 OTTA	20 GRF	1710	1738	110	8.8	4.4		
	2800 OTTA	1 S	1951	1953	10	2.2	1.1		
	2800 OTTA	47 GB	2142	2145.2	5	586	66		
	2695 PENT	29 PBI	2148	2148	15	4.4	2.2		
17	2695 PENT	240 R	2134	2136	2	2.6	1		
18	2800 OTTA	1 S	1816.2	1816.8	1	2.2	1.1		
	2800 OTTA	1 S	2052	2053.5	3.5	1.6	.8		
	2695 PENT	1 S	2159.5	2201.5	5	6.2	2		
19	2695 MANI	4 S/F	0407.4	0408.3	3.2	38.8	10.3		
	8400 BERN	4	0748.1	0750.6	6.5	33			
	2800 OTTA	21 GRF	1330	1500	150	8			
	2800 OTTA	1 S	1352	1354	4	2.8	1.4		
	8400 BERN	3	1437.1	1437.7	7	24			
	8900 BERN	3	1437.1	1437.7	7	25			
	2300 OTTA	1 S	1437	1437.8	3	3.4	1.2		
	2800 OTTA	1 S	1755.5	1756.2	1.5	2.8	1.4		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
OCTOBER 1978

OCT 1978	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	2695	PENT	240 R	2020	2110	50	3.2			
20	8400	BERN	3	1135.5	1136.2	2.5	12			
	8900	BERN	3	1135.5	1136.2	2.5	10			
	8400	BERN	3	1228.3	1234.9	13	13			
	8900	BERN	3	1228.3	1234.9	13	12			
	2800	OTTA	8 S	1609.5	1609.8	.5	2.4	1.2		
	2800	OTTA	1 S	1644.5	1645	1	2	1		
	2800	OTTA	20 GRF	1656	1712	70	3.2	1.8		
	2800	OTTA	20 GRF	1830	1840	95	2.8	1.4		
21	2800	OTTA	23 GRF	1328	1422	120	7	3.5		
	2800	OTTA	1 S	1357	1357.5	3	2.8	1.2		
	2800	OTTA	46F C	1540	1601	7	58	17		
	8400	BERN	46	1556.5	1601	10	60			
	8900	BERN	46	1556.5	1601	10	57			
	2695	BOUL	28 PRE	1557.5E	1558.5U	1.5D	15	5		
	2695	BOUL	45 C	1559 E	1600	4 D	127	42		
	2695	BOUL		1559 E	1601.5		127	42		
	2695	BOUL	29 PBI	1603	1603	1 D	21	7		
	2800	OTTA	30 PBI	1603	1603	60	11.6	5.8		
	2800	OTTA	1 S	1606	1607	2	2.4	1.2		
22	2800	OTTA	20 GRF	1420	1510	110	1.8	1.2		
	2800	OTTA	20 GRF	1805	1810	15	1.4	.7		
	2800	OTTA	20 GRF	1835	1840	15	1.8	.9		
	2800	OTTA	1 S	1937.5	1937.8	1.5	1.8	.9		
	2695	PENT	20 GRF	2050	2255	110	4.8	2.2		
23	2695	MANI	3 S	0323	0324.1	1.7	11.6	3.8		
	2800	OTTA	1 S	1246	1246.2	1	5.2	2.6		
	2800	OTTA	2 S/F	1657	1701	7	3.4			
	2800	OTTA	20 GRF	1940	1945	20	2.2	1.1		
	2695	PENT	20 GRF	2220	2225	15	2	1		
24	2800	OTTA	1 S	1329	1329.2	2	2.6	1		
	2800	OTTA	22 GRF	1735	1800	30	4	1.9		
	2800	OTTA	21 GRF	2014	2110	155	3.6	1.9		
	2695	PENT	1 S	2015	2016	1.5	4.4	2.2		
25	2800	OTTA	40 F	1420.5	1422	4.5	17			
	2800	OTTA	21 GRF	1805	1840	135	3	1.6		
	2800	OTTA	1 S	1811.8	1812.1	2.5	2	1		
26	2800	OTTA	40 F	1931.9	1938.5	7.7	42			
	2695	PENT	20 GRF	2150		100 D	5.8			
27	2800	OTTA	23 GRF	1715	1720	150	6.6	3		
	2800	OTTA	1 S	1720	1720.1	2	2.6	1.3		
	2800	OTTA	1 S	2034	2035.2	6	3	1.5		
	2695	PENT	20 GRF	2225	2229	35	3.6			
28	2800	OTTA	4 S/F	1557.2	1601	9.8	32.4	10.8		
	2695	SGMR	3 S	1557.7	1600.4	7.2	45.9	13.8		SWF
	8800	SGMR	3 S	1559.3	1603.2	5.2	101.6	30.5		SWF
	2800	OTTA	29 PBI	1607	1607	160	5.2	2.2		
	2695	PENT	21 GRF	2007	2120	170	3	2		
	2695	PENT	3 S	2011	2011.5	2	15.6	5.6		
29	2800	OTTA	20 GRF	1310	1330	90	4.6	2.6		
	2800	OTTA	20 GRF	1623	1640	100	1.6	1		
30	2695	PENT	1 S	2118.9	2119	1	5.2	2.6		
31	2695	PENT	20 GRF	1928	1929	22	2.4	1.2		

Observatories:

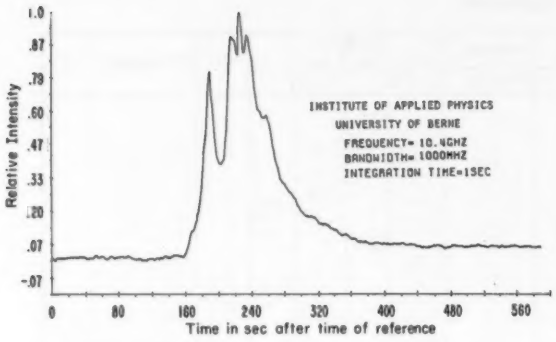
BERN = Berne BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

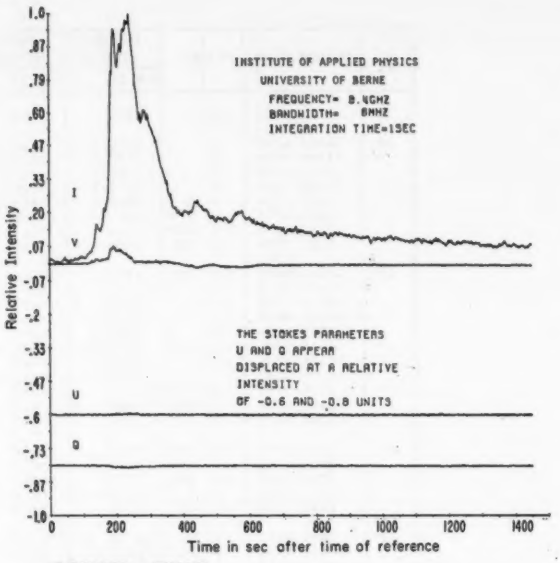
1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SELECTED SOLAR NOISE BURSTS

OCTOBER 1978



8 OCT 1978 0832 UT
1 UNIT = 114 SFU



13 OCT 1978 1234 UT
1 UNIT = 498 SFU

SOLAR X-RAYS BY SATELLITE
SMS GOES
OCTOBER 1978

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
10/ 1	.001	B	.003	.002	M	.001	B	.521	.105	.021	.008	.003	-.002	B	B	B	B	B	B	.001	.001	B	B	B	.029
10/ 2	B	B	B	B	M	B	B	B	B	B	B	B	- B	B	B	B	B	B	B	B	.001	B	B		
10/ 3	B	B	B	B	M	B	B	.001	.006	B	B	B	- B	B	.003	B	B	.005	.008	.002	.001	B	B	B	.001
10/ 4	B	.002	B	.003	M	B	B	B	B	B	B	B	- B	B	B	B	.001	B	B	M	B	B	B	B	B
10/ 5	B	B	B	.001	M	.002	.002	.215	.011	.007	.003	.142	-.002	.009	.012	.002	.002	.002	.002	.013	.071	B	B	B	.013
10/ 6	B	B	B	B	M	.001	B	B	M	M	M	M	- M	.001	B	.001	.103	.101	B	B	B	B	B	B	.012
10/ 7	B	.001	B	B	M	B	B	B	B	B	B	B	- B	B	B	.001	B	.001	B	B	B	B	B	B	B
10/ 8	.003	.002	.004	.003	.009	.001	.001	.002	.013	.002	.002	.002	-.003	.003	.002	B	B	.001	.003	.004	.039	.019	.009	.004	.005
10/ 9	.006	M	.001	.001	M	.001	.001	.002	.002	.003	.002	.005	-.001	B	B	.001	.001	.002	.003	.059	.004	.008	.015	.009	.006
10/10	.006	.003	.002	.001	B	.003	.003	.010	.006	.001	.039	.007	-.002	.002	.002	.002	.001	B	.002	.002	.002	.002	.002	.001	.004
10/11	.001	.002	B	.002	.001	.007	.011	.006	.010	.011	.003	.002	-.001	.003	.009	.009	.001	.001	.001	.001	.001	.002	B	.005	.004
10/12	.002	.024	.109	.073	.018	.006	.002	.002	.002	.002	.002	.002	-.002	.002	.011	.077	.645	.017	.010	.007	.007	.002	B	.002	.017
10/13	.002	.002	.002	.002	B	M	M	M	M	M	M	M	- M	.012	.005	.002	.007	.004	.004	.005	.004	.002	.002	.003	.004
10/14	.002	.005	.002	.031	.004	.004	.044	.049	.010	.004	.002	.004	-.026	.004	.013	.022	.005	.001	.004	.006	.005	.050	.016	.503	.035
10/15	.168	.028	.037	.040	.096	.043	.169	.027	.007	.607	.365	.051	-.035	.055	.011	.002	.005	.002	.016	.120	.067	.002	.004	.002	.081
10/16	.011	.024	.023	.024	.003	.003	.002	.013	.011	.006	.002	.002	-.002	.002	.002	B	.003	.008	.002	.002	.001	.034	.002	.002	.006
10/17	.002	B	B	.002	.001	.002	.004	.002	.001	B	B	.001	-.004	.002	.002	.001	.001	.002	.002	.001	.001	.001	.001	.001	.002
10/18	.004	.005	.001	B	B	B	B	B	B	B	.002	.001	- B	.001	B	B	B	B	B	B	B	.001	.010	B	.002
10/19	.001	.001	B	.001	.041	.002	.001	.045	.007	B	B	.015	-.004	.003	.010	.003	.009	.004	.002	.001	.002	.002	.002	.002	.007
10/20	.002	.015	.006	.003	.002	.002	.003	.016	.010	.004	.005	.006	-.004	.002	B	.002	.003	.005	.003	.002	.003	.004	.001	.001	.004
10/21	.002	.002	.015	.005	.001	.003	.010	.002	.001	.002	B	B	- B	.003	.008	.001	.019	.003	.003	.004	.012	.002	.001	.001	.004
10/22	B	.003	.001	.001	B	B	.021	.001	B	B	.002	B	- B	B	B	B	.001	B	B	.002	.026	.003	.002	.002	.003
10/23	.001	B	.003	.002	B	M	B	B	B	.005	.002	.002	-.002	B	B	.001	.002	.002	B	.001	.001	B	.001	B	.001
10/24	.001	.001	.005	.001	B	B	.005	B	B	B	B	B	- B	B	B	B	B	B	B	B	.002	.004	B	B	.001
10/25	B	B	.017	.003	B	.001	B	M	B	M	B	.012	-.004	B	B	B	B	B	.001	.002	B	B	B	B	.002
10/26	B	B	B	B	B	B	B	B	B	M	.001	.001	- B	B	B	B	B	B	B	.002	B	B	.003	.002	B
10/27	.002	.001	.001	B	B	.001	.002	B	B	B	B	B	- B	B	B	B	B	.002	.001	B	B	B	B	B	B
10/28	.001	.002	B	B	.001	.001	B	B	.001	M	.001	B	- B	B	B	B	.037	.001	B	B	.003	.001	.002	.002	.003
10/29	.002	B	B	B	.002	B	B	B	M	B	B	B	- B	.003	.001	B	.001	B	B	B	B	B	B	B	B
10/30	B	B	B	B	B	B	.002	B	.001	B	B	B	- B	B	B	B	B	B	B	B	B	B	B	B	B
10/31	B	B	B	.002	.006	.002	B	B	B	.003	B	B	- B	B	B	B	B	B	B	.001	B	B	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
OCTOBER 1978

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

MO	DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
10/	1	.009	.007	.011	.012	M	.007	.006	.373	.143	.051	.025	.015	-.011	.009	.008	.007	.006	.006	.006	.006	.006	.005	.005	.006	.030
10/	2	.004	.004	.005	.006	M	.005	.004	.004	.004	.005	.005	.005	-.004	.004	.004	.005	.005	.006	.005	.005	.005	.005	.007	.005	.003
10/	3	.004	.004	.004	.005	M	.004	.004	.005	.015	.005	.004	.004	-.004	.004	.011	.005	.004	.013	.021	.011	.007	.006	.005	.004	.004
10/	4	.005	.010	.006	.009	M	.004	.005	.005	.005	.004	.004	.005	-.006	.006	.004	.004	.006	.010	.004	M	.006	.005	.004	.005	.003
10/	5	.005	.006	.006	.008	M	.009	.010	.020	.026	.020	.017	.076	-.012	.024	.035	.016	.011	.011	.009	.017	.054	.007	.007	.008	.015
10/	6	.007	.007	.006	.005	M	.007	.007	.005	M	M	M	M	- M	.008	.007	.008	.055	.082	.006	.005	.005	.005	.005	.005	.012
10/	7	.009	.006	.005	.006	M	.005	.005	.005	.005	.005	.005	.005	-.005	.005	.005	.006	.008	.009	.007	.008	.007	.007	.007	.006	.003
10/	8	.010	.008	.013	.010	.008	.008	.008	.010	.016	.009	.009	.010	-.011	.011	.009	.008	.007	.008	.011	.016	.071	.054	.033	.024	.010
10/	9	.024	M	.012	.011	M	.009	.017	.010	.010	.014	.012	.015	-.010	.008	.008	.010	.009	.009	.013	.038	.345	.112	.038	.024	.035
10/10		.021	.015	.011	.010	.008	.013	.013	.026	.027	.015	.046	.024	-.016	.014	.012	.012	.010	.009	.012	.015	.014	.013	.013	.011	.010
10/11		.011	.011	.010	.012	.010	.020	.031	.025	.032	.039	.021	.019	-.014	.017	.032	.035	.022	.014	.012	.012	.011	.012	.010	.017	.011
10/12		.012	.034	.116	.116	.055	.026	.019	.017	.014	.013	.014	.013	-.015	.016	.018	.083	.074	.047	.035	.029	.030	.021	.017	.018	.026
10/13		.014	.014	.016	.018	.014	M	M	M	M	M	M	M	- M	.036	.023	.015	.024	.019	.019	.023	.022	.016	.016	.014	.011
10/14		.014	.018	.018	.047	.021	.017	.045	.067	.034	.024	.014	.022	-.039	.022	.030	.047	.026	.016	.020	.027	.021	.078	.044	.240	.037
10/15		.164	.077	.064	.042	.066	.065	.132	.062	.024	.284	.316	.082	-.056	.070	.031	.017	.021	.016	.041	.084	.099	.019	.017	.016	.080
10/16		.026	.034	.035	.033	.014	.015	.011	.020	.027	.018	.014	.011	-.012	.014	.013	.010	.013	.024	.014	.012	.010	.030	.012	.013	.013
10/17		.011	.009	.009	.010	.010	.010	.014	.012	.010	.009	.009	.010	-.016	.015	.012	.009	.009	.011	.012	.010	.009	.010	.010	.011	.006
10/18		.058	.020	.011	.008	.008	.008	.009	.008	.009	.010	.011	.012	-.010	.011	.010	.009	.009	.009	.006	.006	.009	.010	.024	.009	.007
10/19		.010	.010	.009	.010	.043	.011	.010	.034	.020	.009	.008	.018	-.014	.014	.027	.016	.020	.014	.010	.009	.010	.012	.012	.012	.011
10/20		.012	.030	.023	.016	.013	.012	.012	.030	.028	.018	.017	.024	-.019	.015	.010	.011	.013	.015	.012	.011	.010	.014	.010	.010	.010
10/21		.012	.013	.031	.023	.013	.010	.023	.011	.010	.011	.009	.015	-.008	.012	.023	.010	.037	.015	.014	.017	.023	.011	.009	.010	.010
10/22		.008	.011	.010	.009	.009	.009	.024	.011	.010	.009	.011	.009	-.008	.009	.009	.010	.010	.009	.008	.009	.009	.015	.012	.010	.007
10/23		.024	.008	.011	.010	.009	M	.008	.009	.009	.013	.014	.014	-.013	.011	.010	.011	.011	.011	.009	.010	.010	.009	.010	.010	.006
10/24		.010	.010	.010	.011	.009	.008	.015	.009	.009	.008	.008	.007	-.007	.007	.006	.007	.007	.007	.008	.007	.011	.010	.007	.007	.005
10/25		.007	.009	.038	.020	.009	.009	.006	M	.006	M	.006	.017	-.010	.006	.006	.006	.006	.006	.008	.009	.007	.011	.006	.006	.006
10/26		.007	.007	.006	.007	.006	.006	.006	.006	.006	M	.010	.010	-.008	.008	.009	.007	.013	.007	.007	.017	.008	.008	.015	.015	.005
10/27		.011	.011	.010	.008	.008	.009	.012	.009	.007	.007	.007	.007	-.007	.006	.006	.006	.006	.010	.008	.007	.007	.007	.008	.007	.004
10/28		.008	.010	.007	.007	.009	.008	.007	.007	.008	M	.008	.006	-.007	.007	.009	.007	.035	.010	.007	.007	.012	.010	.010	.011	.006
10/29		.009	.007	.007	.008	.010	.007	.007	.006	M	.007	.007	.006	-.005	.013	.010	.007	.009	.006	.006	.006	.005	.006	.006	.006	.004
10/30		.005	.005	.005	.006	.007	.006	.008	.006	.007	.007	.006	.007	-.005	.005	.005	.006	.006	.005	.006	.005	.005	.006	.006	.007	.003
10/31		.005	.005	.005	.010	.010	.013	.008	.006	.007	.012	.009	.006	-.006	.005	.005	.005	.005	.005	.005	.008	.006	.005	.009	.005	.004

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE

GOES

OCTOBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
1	0241	4.3E-08	1.3E-06	0244	5.9E-08	1.9E-06	0246	5.9E-08	1.5E-06
1	0656	8.3E-09	6.7E-07	0732	1.1E-05	7.6E-05	0751	3.7E-06	3.7E-05
3	0753	1.5E-10	3.9E-07	0804	2.0E-07	3.4E-06	0822	4.1E-08	1.8E-06
3	1421	3.1E-10	4.5E-07	1434	1.5E-07	3.0E-06	1442	2.6E-08	1.6E-06
4	0056	8.4E-09	5.9E-07	0101	8.2E-08	2.1E-06	0112	3.3E-08	1.3E-06
4	0327	8.2E-09	5.9E-07	0335	1.0E-07	1.9E-06	0346	2.7E-08	1.2E-06
4	1637	5.3E-09	5.0E-07	1643	5.5E-08	1.3E-06	1650	1.5E-08	8.9E-07
4	1703	6.5E-09	6.1E-07	1708	4.3E-08	1.1E-06	1712	1.3E-08	8.1E-07
5	0733	5.7E-08	1.2E-06	0754	4.6E-07	4.8E-06	0815	1.4E-07	3.0E-06
5	1110	2.3E-08	1.6E-06	1119	8.6E-06	3.1E-05	1127	1.9E-06	1.5E-05
5	0733	5.7E-08	1.2E-06	0754	4.6E-07	4.8E-06	0815	1.4E-07	3.0E-06
5	1110	2.3E-08	1.6E-06	1119	8.6E-06	3.1E-05	1127	1.9E-06	1.5E-05
5	1301	2.3E-08	1.2E-06	1305	1.1E-07	2.0E-06	1307	3.4E-08	1.6E-06
5	1336	2.9E-08	1.7E-06	1350	2.1E-07	4.7E-06	1442	9.2E-08	3.2E-06
5	1942	9.8E-09	7.6E-07	1953	1.2E-06	9.1E-06	1957	1.8E-07	4.4E-06
5	2002	1.4E-07	2.4E-06	2027	1.5E-06	1.0E-05	2036	4.7E-07	5.8E-06
6	1316	4.5E-09	5.4E-07	1322	4.4E-08	1.2E-06	1330	1.4E-08	8.8E-07
6	1541	7.2E-09	7.2E-07	1545	5.8E-08	1.9E-06	1548	3.8E-08	1.3E-06
6	1640	8.6E-09	6.9E-07	1658	1.0E-05	4.4E-05	1709	2.2E-06	2.0E-05
7	0100	4.8E-09	5.2E-07	0106	5.1E-08	1.1E-06	0111	1.2E-08	7.6E-07
7	1513	4.6E-09	5.6E-07	1517	6.8E-08	1.1E-06	1520	1.4E-08	8.0E-07
7	1524	3.7E-09	5.6E-07	1527	9.5E-08	1.3E-06	1530	1.4E-08	8.4E-07
8	0035	2.2E-08	9.3E-07	0041	2.1E-07	2.7E-06	0046	6.4E-08	1.6E-06
8	0121	7.2E-09	6.2E-07	0125	1.1E-07	2.0E-06	0128	5.5E-08	1.2E-06
8	0200	3.7E-08	1.1E-06	0205	1.4E-07	2.1E-06	0210	4.8E-08	1.5E-06
8	0346	2.9E-08	1.0E-06	0349	1.3E-07	2.0E-06	0353	5.3E-08	1.4E-06
8	0419	1.7E-08	1.0E-06	0424	1.4E-07	1.9E-06	0428	3.2E-08	1.4E-06
8	0711	1.2E-08	8.4E-07	0714	5.5E-08	1.2E-06	0717	1.9E-08	9.9E-07
8	0833	9.0E-09	7.6E-07	0837	1.9E-06	1.1E-05	0840	3.7E-07	5.4E-06
8	0927	1.5E-08	9.2E-07	0930	1.0E-07	1.9E-06	0932	6.1E-08	1.3E-06
8	1439	4.3E-09	7.1E-07	1444	1.4E-07	2.2E-06	1447	4.3E-08	1.4E-06
8	1814	1.2E-08	8.4E-07	1817	1.3E-07	2.2E-06	1819	4.5E-08	1.3E-06
8	1909	2.4E-08	1.3E-06	1912	4.7E-08	1.9E-06	1914	4.2E-08	1.5E-06
9	0002	4.6E-08	2.3E-06	0005	1.6E-07	3.3E-06	0007	5.4E-08	2.5E-06
9	0023	1.8E-08	2.0E-06	0028	3.3E-07	4.5E-06	0031	9.9E-08	3.2E-06
9	0513	3.1E-09	3.2E-07	1000	4.3E-08	1.9E-06	1009	1.4E-08	1.1E-06
9	1106	1.9E-08	1.1E-06	1109	8.7E-08	1.9E-06	1145	5.3E-08	1.5E-06
9	1733	6.2E-09	7.6E-07	1738	2.0E-07	2.4E-06	1740	2.5E-08	1.0E-06
9	1909	9.0E-09	9.4E-07	1915	1.2E-07	1.8E-06	1919	3.9E-08	1.3E-06
9	1937	1.7E-08	9.9E-07	2024	8.4E-06	4.4E-05	2059	2.3E-06	2.2E-05
10	0031	4.4E-08	1.7E-06	0040	1.3E-07	3.0E-06	0045	6.0E-08	2.3E-06
10	0511	2.6E-08	8.4E-07	0754	1.4E-07	3.9E-06	0836	4.0E-08	2.3E-06
10	1007	3.0E-08	1.9E-06	1013	4.7E-07	5.0E-06	1019	1.5E-07	3.4E-06
10	1028	2.9E-07	3.9E-06	1036	1.2E-06	8.7E-06	1045	4.4E-07	6.2E-06
11	0837	2.9E-08	2.0E-06	0853	2.9E-07	6.7E-06	0920	1.3E-07	4.3E-06
11	2036	1.1E-08	6.8E-07	2130	2.1E-08	1.4E-06	2226	7.9E-09	1.0E-06
11	2317	1.5E-08	1.2E-06	2326	2.9E-07	4.2E-06	2332	7.9E-08	2.6E-06
12	0001	1.4E-08	1.1E-06	0006	4.9E-08	1.8E-06	0010	2.6E-08	1.4E-06
12	0124	1.9E-08	1.2E-06	0302	1.1E-06	1.4E-05	0402	2.8E-07	7.5E-06
12	1444	7.5E-08	1.7E-06	1546	1.0E-06	1.1E-05	1643	3.6E-07	6.6E-06
12	1839	7.6E-08	3.1E-06	1843	1.8E-07	4.7E-06	1849	1.1E-07	3.9E-06
13	0336	3.2E-08	1.8E-06	0339	1.2E-07	2.7E-06	0344	4.1E-08	2.2E-06
13	1406	7.5E-08	2.7E-06	1410	2.5E-07	4.6E-06	1414	1.1E-07	3.6E-06
13	1826	2.1E-08	1.6E-06	1835	1.3E-07	3.0E-06	1841	4.8E-08	2.3E-06
14	0100	2.6E-08	1.5E-06	0104	6.1E-07	6.7E-06	0106	1.4E-07	3.7E-06
14	0151	2.3E-08	1.7E-06	0155	1.2E-07	2.8E-06	0202	3.2E-08	2.2E-06
14	0329	1.1E-07	3.0E-06	0336	1.2E-06	9.9E-06	0352	3.0E-07	6.2E-06
14	0515	1.7E-08	1.3E-06	0518	2.0E-08	1.0E-06	0528	1.0E-08	1.6E-06
14	0647	1.5E-07	3.4E-06	0657	2.0E-06	1.4E-05	0712	7.5E-07	6.5E-06
14	1242	7.9E-08	2.5E-06	1249	1.5E-06	1.1E-05	1259	3.0E-07	7.0E-06
14	1910	2.6E-08	2.2E-06	1915	3.0E-07	4.1E-06	1929	9.7E-08	3.1E-06
14	2115	5.6E-07	5.9E-06	2128	1.6E-06	1.1E-05	2143	7.0E-07	8.7E-06
14	2327	1.1E-07	2.9E-06	2337	2.4E-05	9.3E-05	2346	9.0E-06	4.6E-05
15	0215	1.7E-07	5.0E-06	0225	1.1E-06	1.1E-05	0235	3.7E-07	8.0E-06
15	0348	1.3E-07	3.1E-06	0402	3.2E-06	1.0E-05	0432	8.0E-07	1.0E-05
15	0626	6.2E-07	6.4E-06	0640	4.6E-06	2.6E-05	0656	1.4E-06	1.6E-05
10	0954	0.0E+00	1.0E-07	0600	8.0E-03	1.0E-03	0615	1.0E-03	4.6E+01
15	1254	8.3E-07	7.2E-06	1306	3.0E-06	2.0E-05	1309	1.2E-06	1.3E-05
15	1606	6.6E-08	2.4E-06	1610	2.6E-07	4.5E-06	1614	1.3E-07	3.3E-06
15	1626	4.9E-08	2.3E-06	1636	6.2E-07	8.9E-06	1649	1.6E-07	5.4E-06
15	1939	2.8E-07	4.1E-06	1957	4.5E-06	2.9E-05	2011	1.1E-06	1.6E-05
16	0040	2.3E-07	3.0E-06	0047	3.8E-07	5.3E-06	0058	1.3E-07	3.0E-06
16	0117	8.4E-08	2.6E-06	0130	2.8E-07	4.4E-06	0136	1.3E-07	2.4E-06
16	0152	1.0E-07	2.4E-06	0201	6.2E-07	5.7E-06	0212	2.3E-07	3.0E-06
16	0233	3.8E-08	2.2E-06	0236	9.3E-07	7.0E-06	0238	1.0E-07	2.9E-06

SOLAR X-RAYS BY SATELLITE

GOES

OCTOBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	I/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
1	0305	4.0E-08	2.0E-06	0310	1.2E-06	6.3E-06	0321	2.4E-07	4.1E-06
1	0346	2.4E-08	1.0E-06	0351	1.4E-07	3.0E-06	0401	7.4E-08	2.4E-06
1	0448	3.1E-10	2.7E-08	0457	5.3E-08	2.3E-06	0606	1.5E-08	1.1E-06
1	0658	1.4E-08	1.0E-06	0701	6.0E-08	1.7E-06	0703	2.7E-08	1.2E-06
1	0735	4.6E-08	1.4E-06	0741	4.2E-07	4.5E-06	0801	1.6E-07	2.9E-06
1	0804	1.4E-07	2.8E-06	0808	4.1E-07	5.4E-06	0816	1.4E-07	3.1E-06
1	0942	1.5E-08	1.2E-06	0953	4.1E-07	5.6E-06	0956	1.3E-07	3.4E-06
1	1304	1.8E-08	1.3E-06	1307	3.6E-08	2.1E-06	1309	2.4E-08	1.3E-06
1	1733	3.4E-08	1.8E-06	1741	2.9E-07	4.6E-06	1751	1.0E-07	3.2E-06
1	1941	1.5E-08	1.1E-06	1944	5.1E-08	2.3E-06	1954	2.6E-08	1.7E-06
1	2140	1.3E-08	9.7E-07	2146	4.0E-06	1.7E-05	2153	7.0E-07	8.6E-06
1	2332	1.9E-08	1.1E-06	2338	6.4E-08	2.0E-06	2342	2.8E-08	1.5E-06
1	0014	2.0E-08	1.1E-06	0017	4.0E-08	1.9E-06	0023	2.9E-08	1.5E-06
1	0340	1.1E-08	8.8E-07	0347	6.3E-08	1.9E-06	0354	3.6E-08	1.3E-06
1	0649	2.4E-08	1.2E-06	0659	9.5E-08	2.6E-06	0706	2.6E-08	1.9E-06
1	1227	3.2E-08	1.3E-06	1245	9.1E-08	2.5E-06	1302	2.0E-08	1.9E-06
1	1444	1.2E-08	1.0E-06	1447	8.8E-08	2.0E-06	1449	5.8E-08	1.4E-06
1	1737	1.6E-08	9.9E-07	1741	5.5E-08	2.1E-06	1743	4.8E-08	1.4E-06
1	2215	1.8E-08	1.0E-06	2219	6.4E-08	2.2E-06	2221	4.9E-08	1.4E-06
1	2158	1.5E-08	1.0E-06	2211	3.3E-07	4.8E-06	2221	1.2E-07	2.9E-06
1	0404	8.9E-09	9.5E-07	0409	5.3E-06	2.5E-05	0412	1.5E-06	1.2E-05
1	0710	7.7E-09	8.4E-07	0717	1.7E-07	2.3E-06	0721	6.7E-08	1.5E-06
1	0746	9.7E-09	9.7E-07	0751	4.9E-06	2.2E-05	0756	1.4E-06	1.0E-05
1	1117	2.1E-08	9.3E-07	1121	9.9E-08	1.6E-06	1126	5.5E-08	1.3E-06
1	1145	9.2E-09	8.7E-07	1155	1.3E-06	6.6E-06	1200	3.9E-07	4.7E-06
1	1356	2.2E-08	1.0E-06	1410	9.6E-08	2.5E-06	1420	0.0E+00	0.0E+00
1	1435	2.7E-08	2.0E-06	1439	3.4E-07	4.0E-06	1447	1.2E-07	3.0E-06
1	1455	6.5E-08	2.4E-06	1458	1.6E-07	3.5E-06	1502	9.9E-08	2.8E-06
1	1604	1.0E-08	1.0E-06	1609	6.3E-07	5.2E-06	1612	1.8E-07	3.1E-06
1	1615	1.5E-07	2.8E-06	1619	4.4E-07	5.0E-06	1621	1.9E-07	3.8E-06
1	1752	1.2E-08	9.7E-07	1757	1.5E-07	2.2E-06	1804	5.4E-08	1.5E-06
2	0119	1.5E-06	1.0E-06	0133	4.8E-07	5.7E-06	0205	8.7E-08	3.3E-06
2	0446	7.5E-09	9.4E-07	0450	6.3E-08	2.2E-06	0452	5.3E-08	1.5E-06
2	0618	1.6E-08	1.1E-06	0621	6.9E-08	1.9E-06	0623	4.5E-08	1.4E-06
2	0654	3.6E-08	1.4E-06	0703	4.2E-07	4.3E-06	0707	1.4E-07	2.8E-06
2	0618	1.6E-08	1.1E-06	0621	6.9E-08	1.9E-06	0623	4.5E-08	1.4E-06
2	0656	3.8E-08	1.4E-06	0703	4.2E-07	4.3E-06	0707	1.4E-07	2.8E-06
2	0737	1.2E-07	3.1E-06	0740	3.0E-07	4.4E-06	0745	1.5E-07	3.6E-06
2	1020	2.2E-08	1.2E-06	1023	9.0E-08	1.5E-06	1025	6.1E-08	1.2E-06
2	1043	4.5E-08	1.4E-06	1049	1.8E-07	2.7E-06	1102	0.0E+00	0.0E+00
2	1227	1.7E-08	1.6E-06	1235	2.1E-07	3.6E-06	1239	6.2E-08	2.6E-06
2	1540	2.0E-08	1.2E-06	1543	5.5E-08	1.9E-06	1545	4.3E-08	1.5E-06
2	1555	1.5E-08	1.1E-06	1601	1.0E-07	2.3E-06	1605	2.7E-08	1.6E-06
2	1659	2.5E-08	1.2E-06	1708	1.5E-07	3.1E-06	1714	4.6E-08	2.0E-06
2	1745	1.0E-08	9.5E-07	1748	1.1E-07	2.2E-06	1750	3.9E-08	1.2E-06
2	1809	1.2E-08	1.0E-06	1812	5.2E-08	1.7E-06	1817	3.1E-08	1.3E-06
2	2018	1.7E-08	9.6E-07	2024	7.7E-08	2.0E-06	2030	4.3E-08	1.4E-06
2	2139	2.0E-08	1.1E-06	2146	2.3E-07	4.0E-06	2150	6.1E-08	2.3E-06
2	0157	2.2E-08	1.1E-06	0210	3.8E-07	5.1E-06	0223	9.0E-08	3.0E-06
2	0248	4.3E-08	1.8E-06	0257	5.0E-07	5.5E-06	0308	1.1E-07	3.5E-06
2	0554	9.8E-09	1.0E-06	0601	7.3E-07	5.9E-06	0611	1.3E-07	3.4E-06
2	0754	2.2E-08	1.1E-06	0757	5.8E-08	1.6E-06	0801	3.9E-08	1.4E-06
2	1354	3.0E-08	1.5E-06	1402	4.7E-07	5.3E-06	1412	1.1E-07	3.4E-06
2	1554	2.2E-08	1.1E-06	1612	3.7E-07	5.4E-06	1638	1.1E-07	3.3E-06
2	1820	2.4E-08	1.3E-06	1825	8.1E-08	2.2E-06	1830	2.3E-08	1.7E-06
2	2023	3.3E-08	1.3E-06	2034	6.4E-07	6.6E-06	2039	1.6E-07	3.7E-06
2	0113	8.4E-09	8.4E-07	0117	9.4E-08	1.8E-06	0124	3.0E-08	1.2E-06
2	0558	2.4E-08	1.2E-06	0603	7.0E-06	2.1E-06	0605	3.0E-08	1.6E-06
2	1936	9.7E-09	7.6E-07	1940	6.8E-08	1.3E-06	1945	2.2E-08	1.0E-06
2	2109	1.4E-08	9.5E-07	2113	6.8E-08	2.2E-06	2131	3.4E-08	1.5E-06
2	0237	4.8E-09	7.0E-07	0249	1.3E-07	2.6E-06	0255	2.8E-08	1.5E-06
2	0321	9.0E-09	8.2E-07	0325	7.0E-08	1.9E-06	0333	2.8E-08	1.3E-06
2	0943	9.3E-09	1.0E-06	0948	8.4E-07	6.1E-06	0950	2.4E-07	2.8E-06
2	1700	4.1E-08	1.4E-06	1703	7.3E-08	2.1E-06	1708	2.8E-08	1.7E-06
2	2052	1.5E-08	9.4E-07	2057	4.5E-08	1.4E-06	2104	1.5E-08	1.1E-06
2	2303	6.8E-09	8.2E-07	2307	3.6E-08	1.3E-06	2310	1.0E-08	1.0E-06
2	0605	4.8E-09	7.8E-07	0612	3.1E-07	3.9E-06	0620	6.8E-08	2.2E-06
2	1326	2.1E-09	6.2E-07	1330	4.2E-08	1.0E-06	1334	9.8E-09	8.1E-07
2	2013	1.0E-08	8.2E-07	2115	9.3E-08	2.6E-06	2126	9.2E-09	1.6E-06
2	0200	1.8E-08	1.2E-06	0247	3.0E-07	5.2E-06	0305	8.8E-08	3.1E-06
2	0509	4.1E-08	1.2E-06	0512	5.9E-08	2.0E-06	0514	4.5E-08	1.3E-06
2	0858	6.7E-09	7.2E-07	0909	8.1E-08	2.1E-06	0916	3.4E-08	1.4E-06
2	1137	4.7E-09	6.1E-07	1153	7.9E-07	6.7E-06	1204	1.3E-07	3.6E-06
2	2345	3.1E-09	5.6E-07	2349	2.4E-08	1.0E-06	2352	7.8E-09	7.8E-07

SOLAR X-RAYS BY SATELLITE

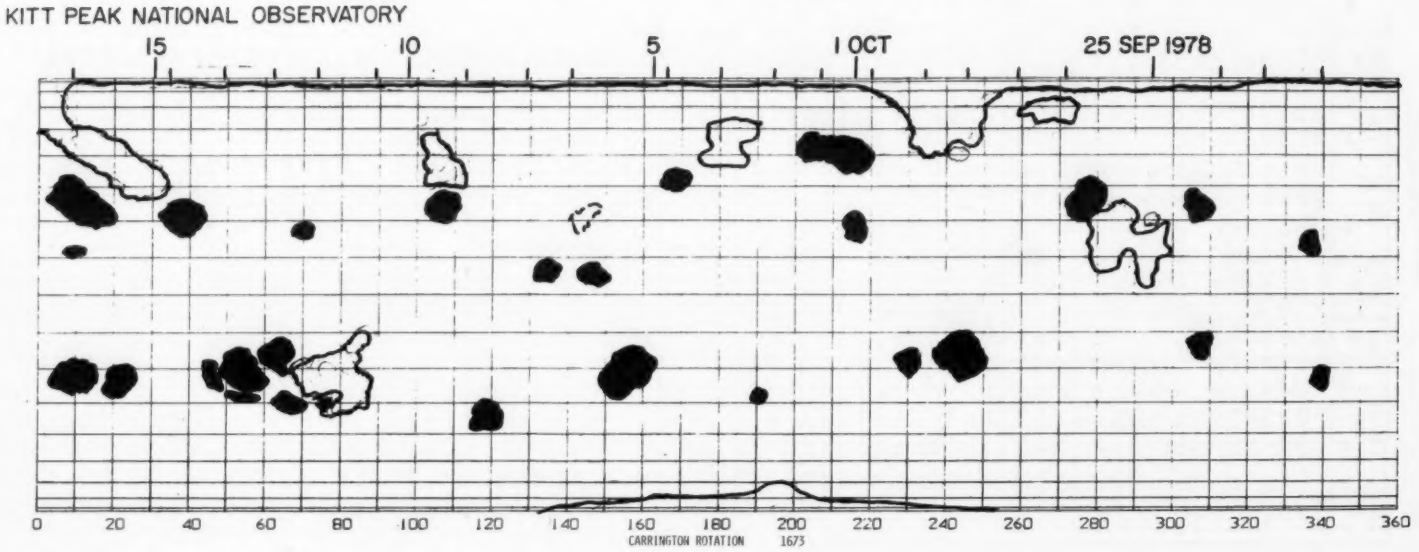
GOES

OCTOBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
26	0055	3.6E-09	6.0E-07	0059	2.2E-08	1.0E-06	0101	8.1E-09	7.6E-07
26	1929	7.9E-09	8.4E-07	1932	4.9E-08	1.8E-06	1938	2.6E-08	1.2E-06
26	2158	1.5E-08	1.0E-06	2229	3.0E-08	2.0E-06	2332	2.6E-08	1.5E-06
27	0638	1.1E-08	8.9E-07	0643	4.9E-08	2.0E-06	0703	2.2E-08	1.4E-06
27	1010	3.4E-09	6.5E-07	1014	2.6E-08	1.0E-06	1017	9.5E-09	8.0E-07
27	1715	5.0E-09	5.9E-07	1721	8.8E-08	2.1E-06	1729	2.5E-08	1.2E-06
27	2033	7.2E-09	6.2E-07	2037	4.6E-08	1.1E-06	2041	1.2E-08	8.3E-07
27	2225	6.9E-09	6.7E-07	2229	5.2E-08	1.4E-06	2234	1.9E-08	1.0E-06
28	0058	2.3E-08	1.1E-06	0101	6.0E-08	1.8E-06	0108	3.5E-08	1.3E-06
28	0432	6.1E-09	7.7E-07	0436	3.4E-08	1.2E-06	0446	1.5E-08	9.6E-07
28	0524	4.0E-09	6.4E-07	0528	6.8E-08	1.9E-06	0536	2.5E-08	1.2E-06
28	0827	4.5E-09	7.1E-07	0832	5.1E-08	1.4E-06	0835	1.6E-08	1.0E-06
28	1001	2.3E-09	6.2E-07	1005	5.7E-08	1.3E-06	1008	1.4E-08	9.5E-07
28	1555	3.1E-09	7.3E-07	1604	5.8E-06	3.3E-05	1606	1.0E-06	1.5E-05
28	2008	1.9E-08	1.0E-06	2014	1.4E-07	2.5E-06	2018	3.0E-08	1.7E-06
28	2228	7.7E-09	8.1E-07	2231	1.0E-07	1.9E-06	2244	2.7E-08	1.3E-06
29	2318	6.9E-09	8.2E-07	2323	5.0E-08	2.1E-06	2336	2.9E-08	1.4E-06
29	0408	1.2E-08	1.0E-06	0411	7.1E-08	1.9E-06	0415	4.5E-08	1.5E-06
29	1002	7.9E-09	7.3E-07	1005	4.2E-08	1.0E-06	1011	1.3E-08	9.0E-07
29	1319	3.4E-08	1.1E-06	1332	8.5E-08	2.2E-06	1343	1.9E-08	1.6E-06
29	1405	2.2E-08	1.2E-06	1408	3.8E-08	2.0E-06	1410	3.3E-08	1.5E-06
30	0454	6.2E-09	6.7E-07	0457	3.5E-08	1.1E-06	0500	1.2E-08	8.1E-07
30	0623	3.4E-09	5.7E-07	0627	9.3E-08	1.5E-06	0630	2.6E-08	1.0E-06
30	0646	6.2E-09	6.2E-07	0654	6.0E-08	1.4E-06	0701	1.7E-08	9.9E-07
30	0913	1.2E-08	7.2E-07	0817	9.8E-08	2.0E-06	0820	6.2E-08	1.4E-06
31	0330	2.9E-09	5.7E-07	0336	6.3E-08	2.0E-06	0344	2.8E-08	1.2E-06
31	0423	2.7E-08	9.7E-07	0434	1.5E-07	3.2E-06	0459	3.8E-08	2.0E-06
31	0759	6.7E-09	6.8E-07	0804	4.8E-08	1.3E-06	0811	1.3E-08	9.7E-07
31	0902	2.6E-09	5.3E-07	0913	1.3E-07	2.7E-06	0922	3.2E-08	1.5E-06
31	1927	5.7E-09	5.6E-07	1937	3.6E-08	1.1E-06	1956	1.1E-08	8.5E-07

HELIUM 10830Å SYNOPTIC MAPS

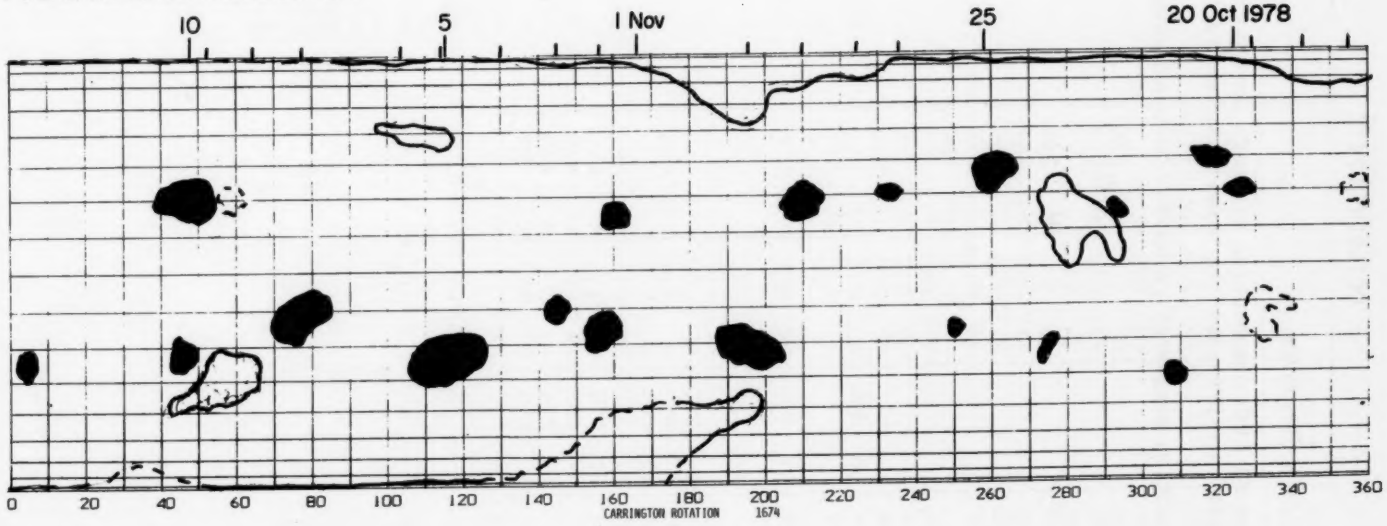
CARRINGTON ROTATION 1673



HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1674

KITT PEAK NATIONAL OBSERVATORY



CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

OCTOBER 1978

Big Bear Solar Observatory

Only one D3 limb observation was made during the month of October. These data are presented in numerical form rather than graphically.

Position angles of coronal hole boundaries (in degrees)

Date	North		South	
11 October	51	-36	-166	164

SOLAR WIND

Interplanetary Scintillations

OCTOBER 1978

DAY	3C48 VEL	ERR	3C144 VEL	ERR	3C147 VEL	ERR	3C161 VEL	ERR	3C237 VEL	ERR	3C273 VEL	ERR	3C298 VEL	ERR	3C459 VEL	ERR
1									480	66			373	5		
2			502	16			458	16	619	81			323	56		
3	476	9	351	60			439	40	463	8			382	13		
4			473	18			500	37	436	14			411	31		
5									568	16			363	35		
6			443	10			266	8	315	18			443	32		
7			447	95			325	108	274	14			379	6		
8									313	5			344	4		
9			337	52			266	5	272	15			440	10		
10			382	18			406	43	298	17			391	9	504	5
11			315	8			291	22	405	6			373	4		
12	429	6	384	15	353	56	346	5	578	99			452	46		
13			503	9			384	26								
14			354	12			434	15	561	17			591	8		
15			520	14			337	6	365	23			447	59		
16			404	10			380	11	330	37			491	95		
17			336	35			389	37	336	6	288	60	411	70		
18			375	7			487	4					563	15	488	20
19			369	29			295	6								
20			342	39			332	35	370	28	285	13	697	8		
21			356	17												
22			342	26					302	20	251	44				
23			368	34					274	14						
24									232	4	222	3			474	19
25			303	5			253	23	244	6	234	4	375	21	436	37
26									259	4	283	14	448	7	493	40
27	413	2	309	12	259	12	295	3	319	11	334	13	505	82	394	16
28			316	4			278	5	271	5	320	16	629	13	362	30
29			378	44			262	3	329	21	258	4	503	74		
30							264	4			244	6				
31			308	13			297	3	282	8	273	4				

OCTOBER 5					15				25			
	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON	UT	LAT	DIST	DLON
3C48	9.	11.	1.27	5.	8.	10.	1.28	3.	8.	9.	1.28	1.
3C144	13.	5.	1.13	15.	12.	4.	1.17	13.	12.	3.	1.21	11.
3C147	12.	12.	1.11	14.	11.	11.	1.15	13.	11.	10.	1.19	11.
3C161	14.	-2.	1.07	14.	14.	-2.	1.11	13.	13.	-3.	1.15	11.
3C237	18.	-2.	0.67	48.	17.	-1.	0.78	38.	17.	0.	0.88	28.
3C273	20.	32.	0.14	84.	19.	13.	0.30	74.	19.	6.	0.45	63.
3C298	22.	49.	0.43	-57.	21.	68.	0.35	-45.	21.	71.	0.33	39.
3C459	6.	8.	1.28	-5.	6.	8.	1.26	-7.	5.	7.	1.24	-9.

INFERRED IP MAGNETIC FIELD

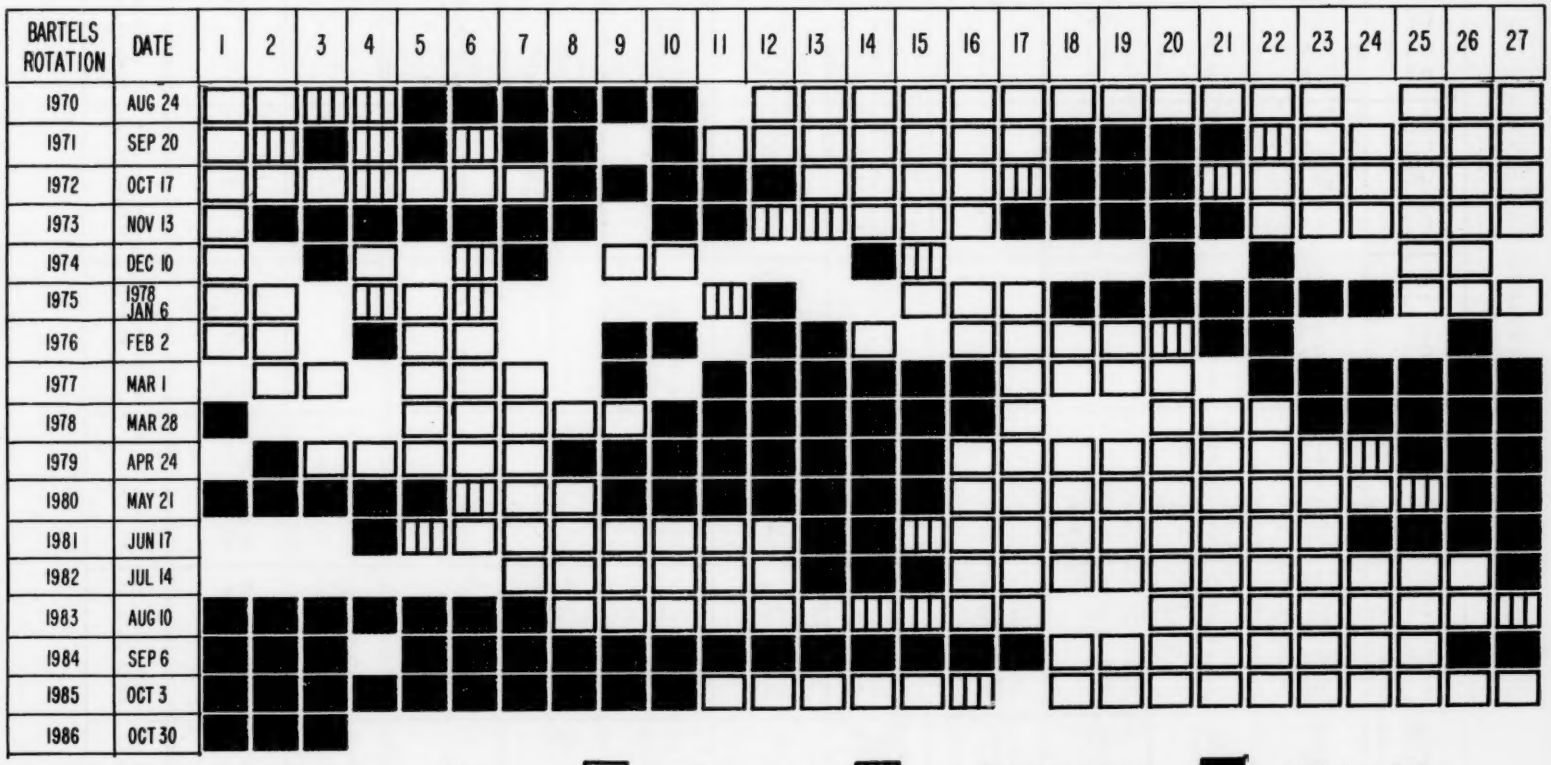
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1969	AUG 2		TA						TA	-			TA	*								AT	TA					
1970	AUG 29			-	-	-		TA										AT	AT			AT	TA	TA	-	AT	AT	
1971	SEP 25						-	-	-	-	-	-					TA				TA							
1972	OCT 22					-	AT														AT	AT				*		
1973	NOV 18			TA	AT						-		AT							*			*		*			
1974	DEC 15				-	-	-		AT	-		AT			AT	AT		AT		TA		TA		TA			*	
1975	1978 JAN 11		*	*						*		*						*			TA		-	AT		-		-
1976	FEB 7						*	TA				-				-						-		*		TA	A*	TA
1977	MAR 6	TA		-					AT			T*	*					TA			AT	AT		AT		*	TA		
1978	APR 2							*	-		AT												AT	AT					
1979	APR 29		TA		*		TA	AT	AT	TA		-	-	T*						TA	TA			AT					
1980	MAY 26				TA			AT	AT				-			AT	TA					-				-	-	-
1981	JUN 22	TA					A*					-	TA	TA	TA	AT			*					*	AT	AT	-		AT		
1982	JUL 19									TA							-	-		TA					AT	AT	*		TA		
1983	AUG 15					TA			AT		AT	AT		AT	TA							A*						TA		
1984	SEP 11			TA		AT				TA	T*						A*		-					-			A*	TA	-	
1985	OCT 8		*	TA	T*			AT			-	-	-						TA	TA	-		AT			-				

[ ] = definitely towards the sun [ ] = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1977		1978									
DAY	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
01	6	-14	.	16	.	52	-12	-28	1	40	26	-11
02	1	-10	.	31	22	46	-34	-22	13	39	32	-20
03	-14	-7	14	26	12	43	-27	-12	15	42	15	-14
04	-16	8	31	.	.	13	-27	-5	18	39	18	-8
05	-11	26	.	-5	8	4	-29	6	24	31	2	-3
06	-1	46	27	4	11	-15	-27	5	43	29	-24	-7
07	11	55	15	9	4	-32	-23	21	42	30	-12	-20
08	31	53	.	.	.	-53	-12	33	36	17	-7	-29
09	46	46	-1	.	-31	-52	3	41	16	-11	.	-37
10	48	26	11	-28	.	-41	24	40	-11	-10	-35	-29
11	51	.	0	-43	-70	-32	41	23	-17	-15	-34	-32
12	32	-2	.	.	-78	-4	50	12	-12	-22	-42	-14
13	14	10	.	-41	-56	22	47	8	-38	-33	-36	2
14	-4	.	.	-23	-49	.	30	0	.	-43	-27	7
15	-10	1	.	3	-28	.	16	-24	.	-31	-26	8
16	-18	-6	0	.	-3	58	5	-38	.	-9	-36	9
17	-24	.	-3	31	18	37	1	.	.	5	-48	5
18	-5	6	.	22	54	11	-29	.	.	13	-44	-1
19	-11	8	.	37	48	-9	-49	.	.	7	-50	.
20	-12	.	18	22	24	-30	-75	-16	23	7	-33	4
21	.	.	39	-1	.	-49	-79	0	21	5	-21	3
22	-7	.	10	-18	-23	-50	-59	24	16	4	-14	19
23	-4	-5	-4	-49	-49	-62	-37	51	6	-1	5	20
24	0	-1	-15	.	-69	.	-21	52	3	1	31	25
25	2	.	-17	.	-79	-13	-9	48	3	5	43	23
26	4	.	-36	.	-73	10	1	30	-7	18	42	24
27	7	.	-48	-34	-53	13	27	12	-13	.	40	29
28	5	.	-33	.	-28	6	14	3	-6	.	29	30
29	-2	-9	-15		.	13	-10	-5	14	41	15	17
30	-11	.	14		.	18	-20	-10	27	41	2	-3
31		-20	10		.		-27		33	35		-16

Dot symbol entry indicates no data available for the day.

BOULDER GEOMAGNETIC SUBSTORM LOG

OCTOBER 1978

DATE	TIME OF ONSET	DIR.	COMMENTS
1	0610	West	Weak
	0705	West	
	0755	West	1st of double onset
	0830	West	2nd of double onset
	1000	West	Local SS near College
	1300		
2	0300	East	SS centered near Back-Eskimo Pt.
	1010	West	1st of multiple onset
	1125	West	2nd of multiple onset
	1150	West	3rd of multiple onset
	1215	West	4th of multiple onset
	1300		1st of double onset
	1335		2nd of double onset
3	0115	East	
	0455	East	Weak
	0620	West	
	0940	West	Localized southern Alaska
4	0052		SSC
	0510	East	
	0545	East	
	0905	West	
	1140	West	
	1235	West	
	1340	West	
5	0245	East	
	1110	West	
6			Few unsettled periods; no distinct onsets
7	0415		Localized SS; Eskimo Pt. - Rankin Inlet
8	0430	East	1st of multiple onset
	0500	East	2nd of multiple onset
	0530	East	3rd of multiple onset
	1045	West	1st of double onset
	1105	West	2nd of double onset
9	0322		Positive impulse H-component mid and low latitude stations
	0420		Positive impulse H-component mid and low latitude stations
			0820-1315 disturbed period
10	0225	East	Slow onset
	0325	East	
	0400	East	
	1050	West	
11			Quiet day
12	1100	West	Moderate SS
	1330		
	1445		
13			Unsettled periods but no distinct SS onsets
14			Unsettled periods but no distinct SS onsets
15			Unsettled periods but no distinct SS onsets
16			Quiet day
17			Quiet day
18	0350	East	1st of double onset
	0405	East	2nd of double onset
	0625	≈center	Weak
	0655	≈center	Weak
	1105	West	Field disturbed after 1610 UT, no distinct SS onsets
19			Field disturbed 0440-1600 UT
	0815	West	Moderate SS
	1150	West	Moderate SS
20	0215		Weak, localized SS Back - Gillam
	0240		Weak, localized SS Rankin Inlet - Eskimo Pt.
	0255		Weak, localized SS Rankin Inlet - Eskimo Pt.
	1105	West	Moderate SS
21	0300	East	Weak SS
	0435	East	
	0515	East	
	1010	West	Moderate SS
	1345		Slow onset
22	0430	East	Weak SS
	0620	≈center	Weak SS
	0840	West	1st of double onset
	0900	West	2nd of double onset
23	0445		Localized SS Rankin Inlet - Eskimo Pt.
	0725	≈center	
	0805	West	
24	0500	East	Weak SS
25	0745		Weak localized SS; Back to Island Lake to Ft. Smith
	0805		Weak localized SS; Back to Island Lake to Ft. Smith
	1050		Onset of multiple SS onsets lasting through 1600 UT
26	0430	East	Weak SS
	0845		Onset of disturbed period; no distinct SS activity in full network
27			Disturbed condition continues through 1400 UT
	0530	East	
	0645	≈center	
	0900	West	Moderate SS
	0945	West	Moderate SS
	1015	West	
	1200	West	
28	0310	East	
	0410	East	
	0445	East	
	0610	West	Moderate SS
29			Numerous minor injections through disturbed period 0650 - 1930 UT
	0830		Weak SS
	1315		Moderate SS
	1400		Moderate SS
	1715		Moderate SS
30	0500		Gradual onset of mag storm conditions lasting until 2225 UT
	1140		Strong SS
	1615		Strong SS
31	0225	East	Weak SS
	0625	≈center	
	1000	West	
	1330	West	Strong SS
	1630		

SEPTEMBER 1978 DATA

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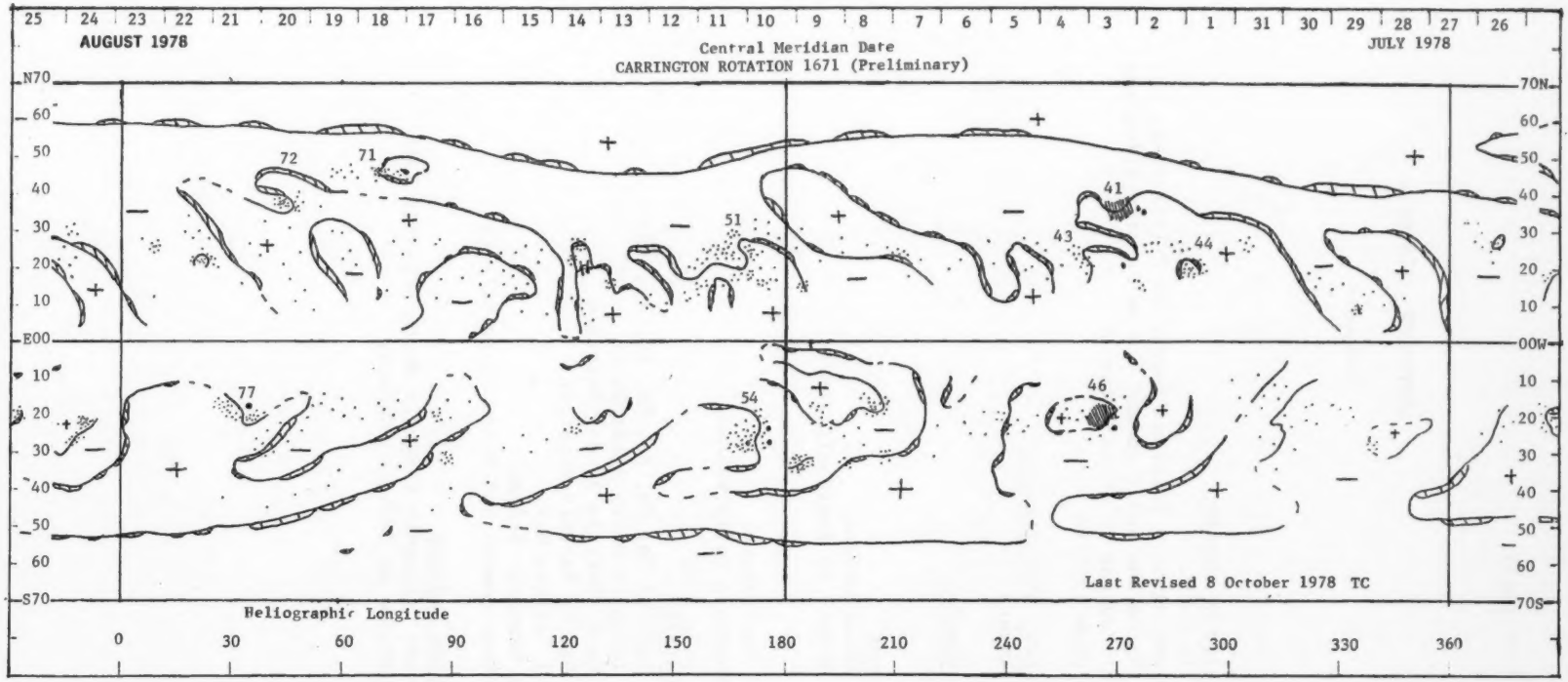
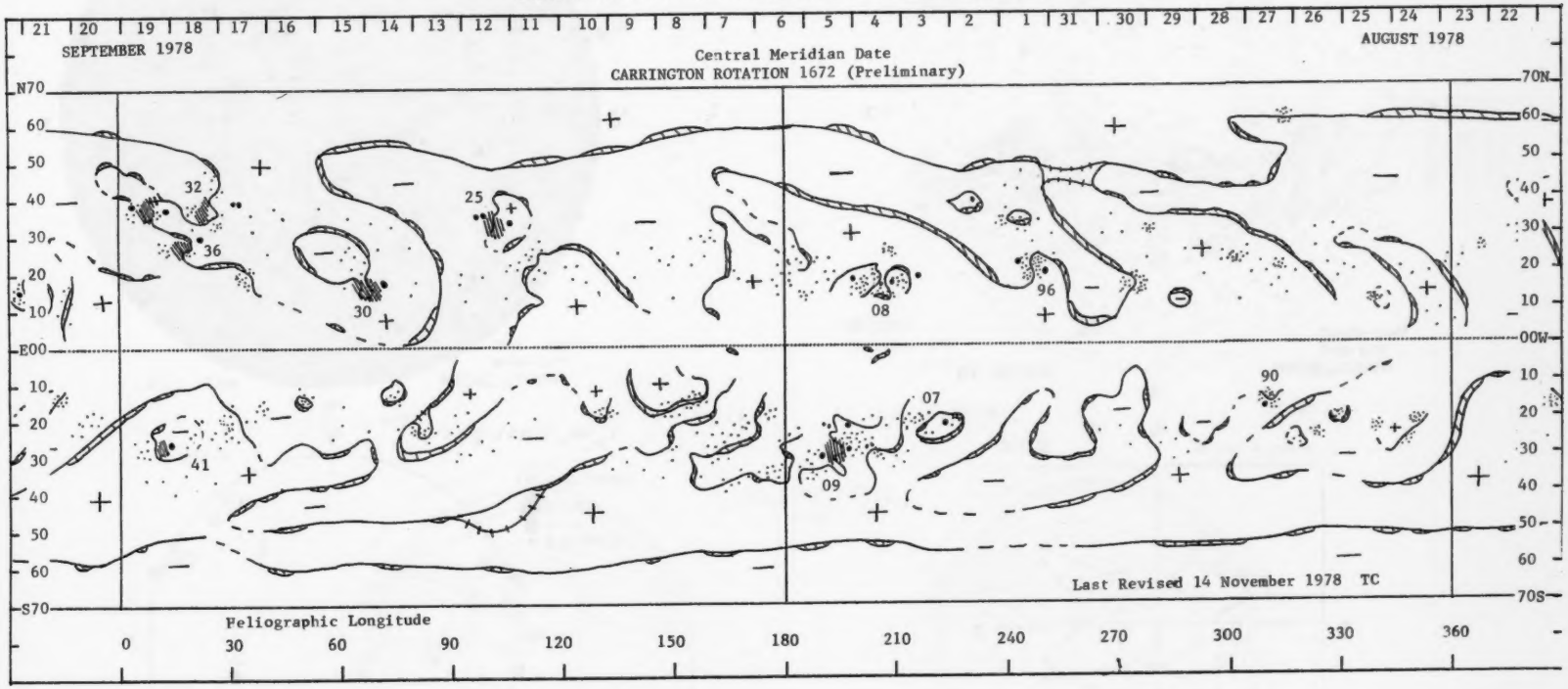
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1671 (PRELIMINARY)



Hα SYNOPTIC CHART

CARRINGTON ROTATION 1672 (PRELIMINARY)



SEPTEMBER 1, 1978 (P = 21.01, B_o = 7.19, L_o = 251.62)

LOCKHEED OSO-8 X-RAY

Np

PLEASE NOTE
The Lockheed MXRH on the OSO-8 satellite has provided Solar X-ray maps since June 1975. The entire observatory was intentionally turned off on 30 September 1978, with no plan of future operation.

35 30 3.0 10 20 7 100 10

E W

Sp

DETECTABLE (D)
D x 20
D x 500
HIGHLY VARIABLE

1945 UT

1-8Å FLUX (10^{-6} Wm^{-2})

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E W

Sp

1538 UT

SEE NOTE ON PAGE 50.

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

Np

E W

Sp

1414 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.8

Np

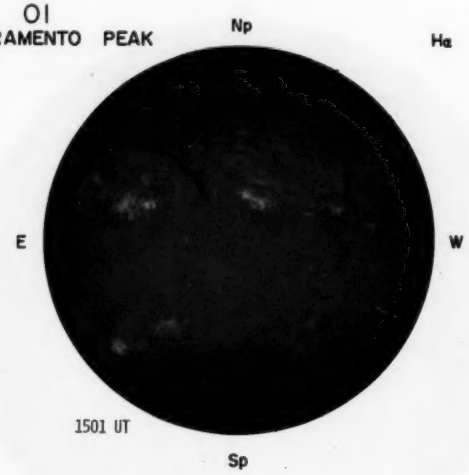
E W

Sp

Levels
± 5
± 10
± 20
± 40
± 80

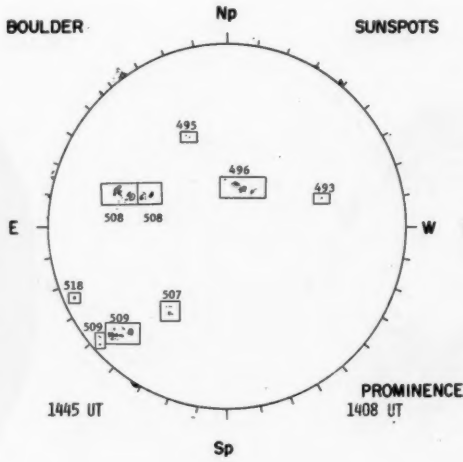
17.22-18.40 UT

01
SACRAMENTO PEAK



1501 UT

Hα BOULDER



1445 UT

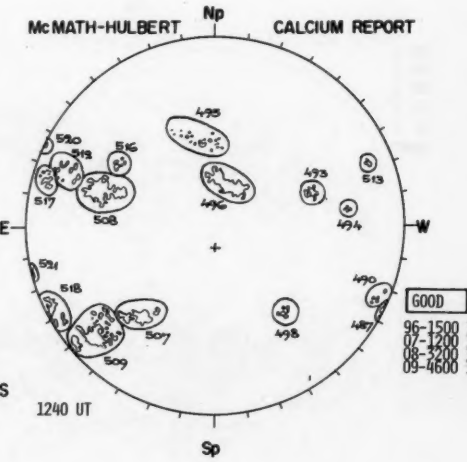
SUNSPOTS

PROMINENCES

1408 UT

McMATH-HULBERT

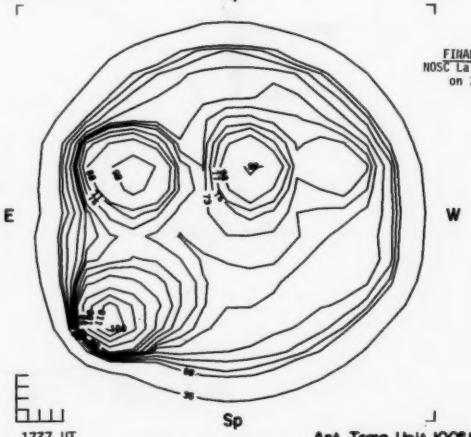
CALCIUM REPORT



GOOD	M
96-1500	3.0
07-1200	3.0
08-2200	3.5
09-4600	3.5

1240 UT

NOSC LA POSTA 2.0 CM

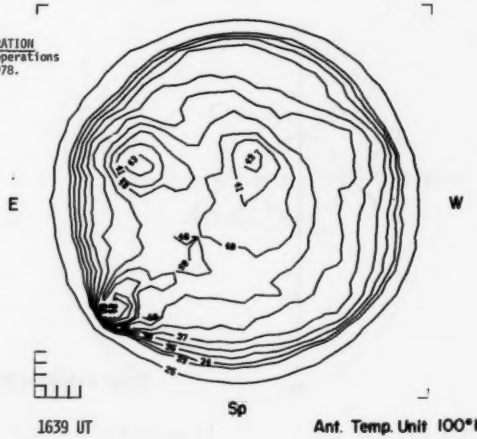


1737 UT

Ant. Temp. Unit 100°K

FINAL MONTH OF OPERATION
NOSC La Posta ceased operations
on 30 September 1978.

NOSC LA POSTA 8.6 MM

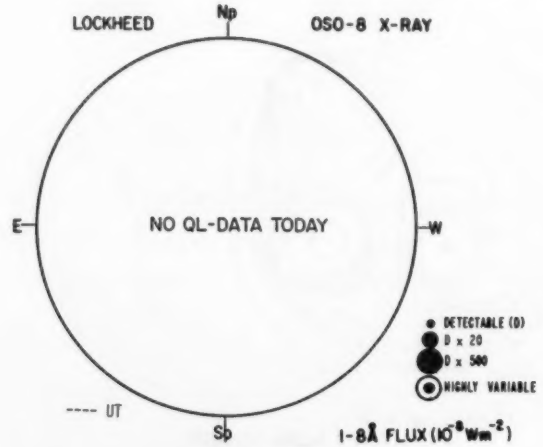


1639 UT

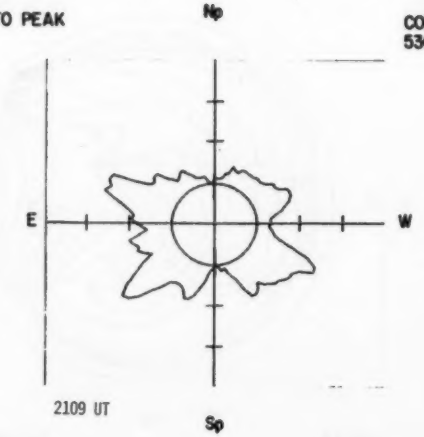
Ant. Temp. Unit 100°K

SEPTEMBER 2, 1978 (P = 21.26, B_o = 7.21, L_o = 238.41)

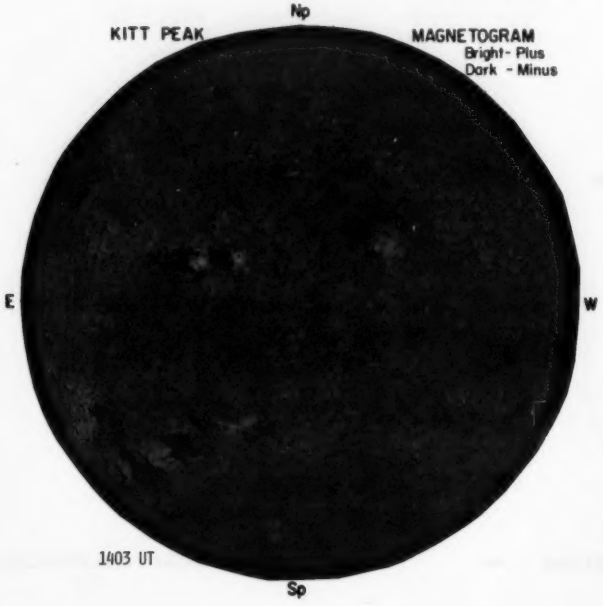
LOCKHEED OSO-8 X-RAY



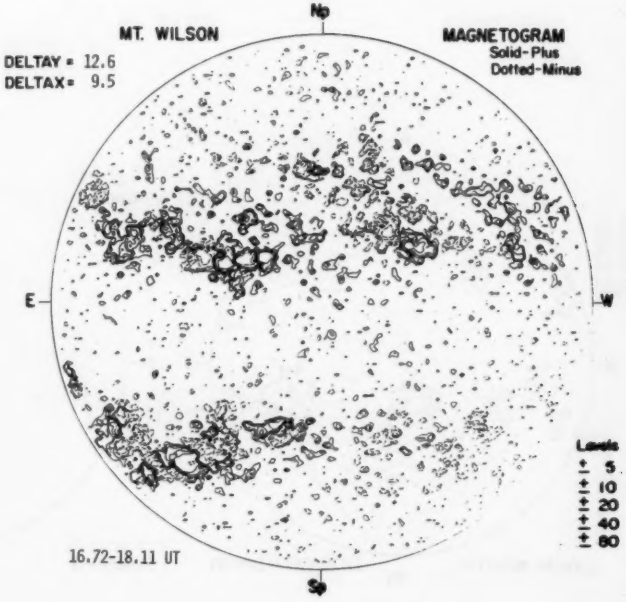
SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



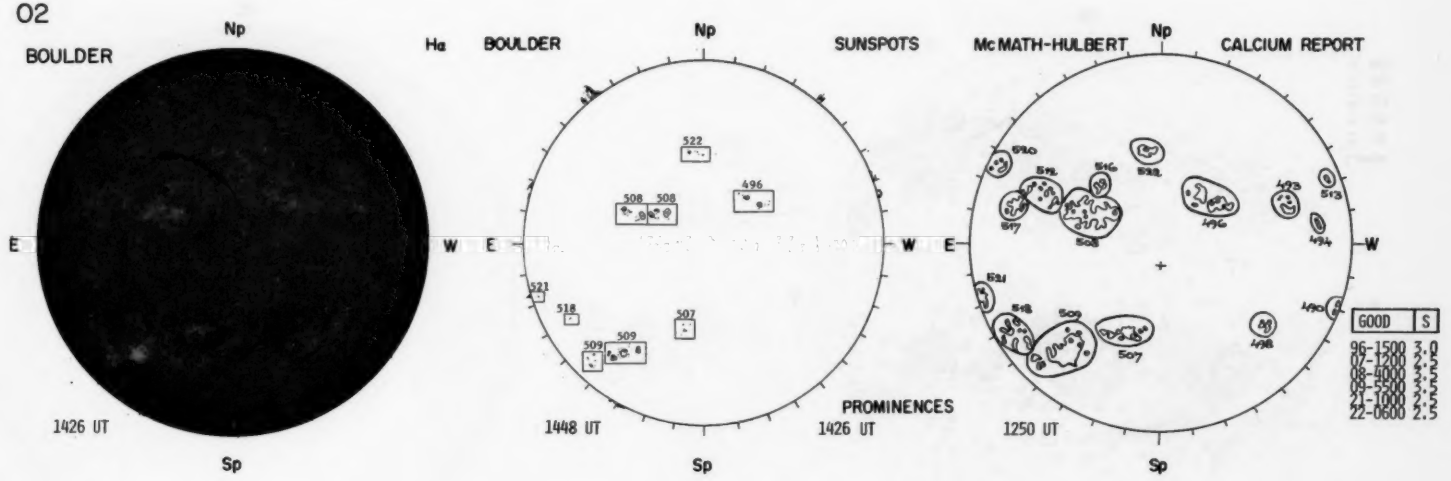
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

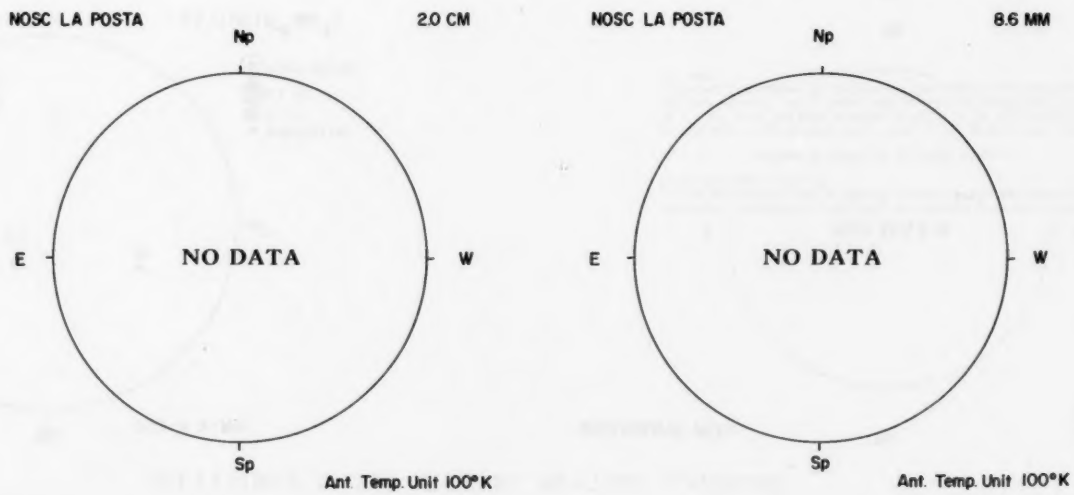


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.5



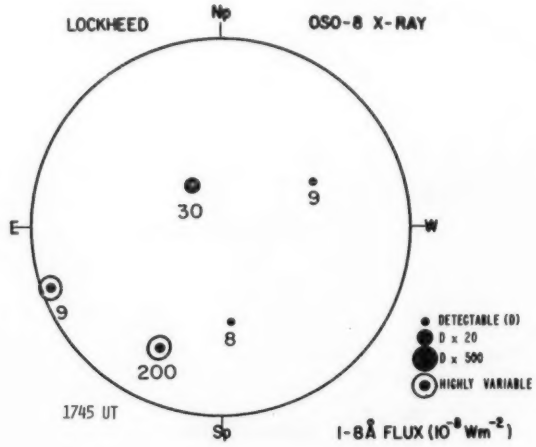
02


BOULDER
Np
Hα
E
W
Sp
1426 UT
BOULDER
Np
SUNSPOTS
522
508
508
496
521
518
507
509
509
E
W
Sp
1448 UT
PROMINENCES
1426 UT
McMATH-HULBERT
Np
CALCIUM REPORT
520
512
516
522
493
513
517
508
496
494
521
518
509
507
490
498
E
W
Sp
1250 UT
GOOD S
96-1500 3.0
07-1200 2.5
08-4000 3.5
09-5500 3.5
21-1000 2.5
22-0600 2.5


NOSC LA POSTA
2.0 CM
Np
E
NO DATA
W
Sp
Ant. Temp. Unit 100°K
NOSC LA POSTA
8.6 MM
Np
E
NO DATA
W
Sp
Ant. Temp. Unit 100°K

SEPTEMBER 3, 1978 (P = 21.51, B_o = 7.22, L_o = 225.20)

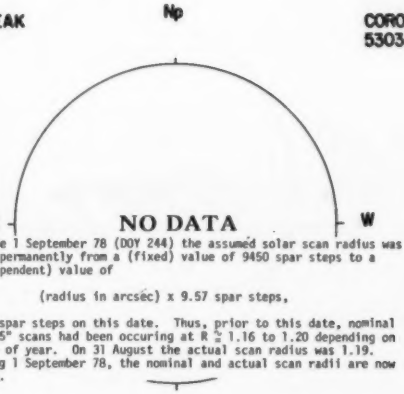
LOCKHEED — OSO-8 X-RAY



1745 UT

I-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å

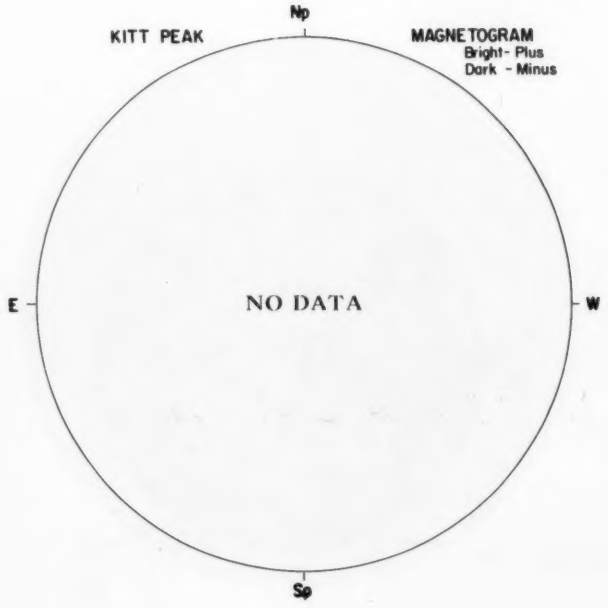


Effective 1 September 78 (DOY 244) the assumed solar scan radius was changed permanently from a (fixed) value of 9450 spar steps to a (time-dependent) value of

(radius in arcsec) x 9.57 spar steps,

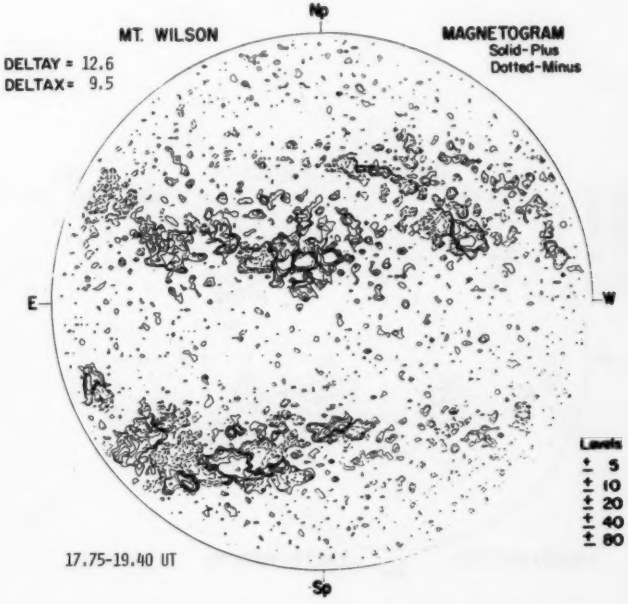
or 9115 spar steps on this date. Thus, prior to this date, nominal $^{\circ}R_\odot$ = 1.15° scans had been occuring at R ≃ 1.16 to 1.20 depending on the time of year. On 31 August the actual scan radius was 1.19. Beginning 1 September 78, the nominal and actual scan radii are now the same.

KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus



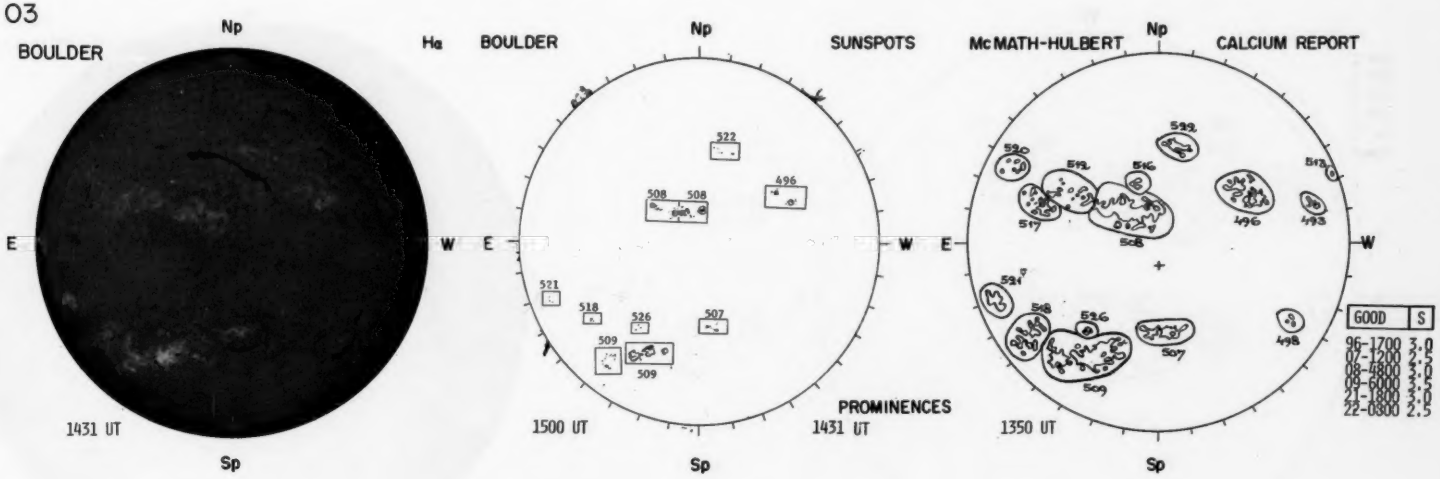
MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus

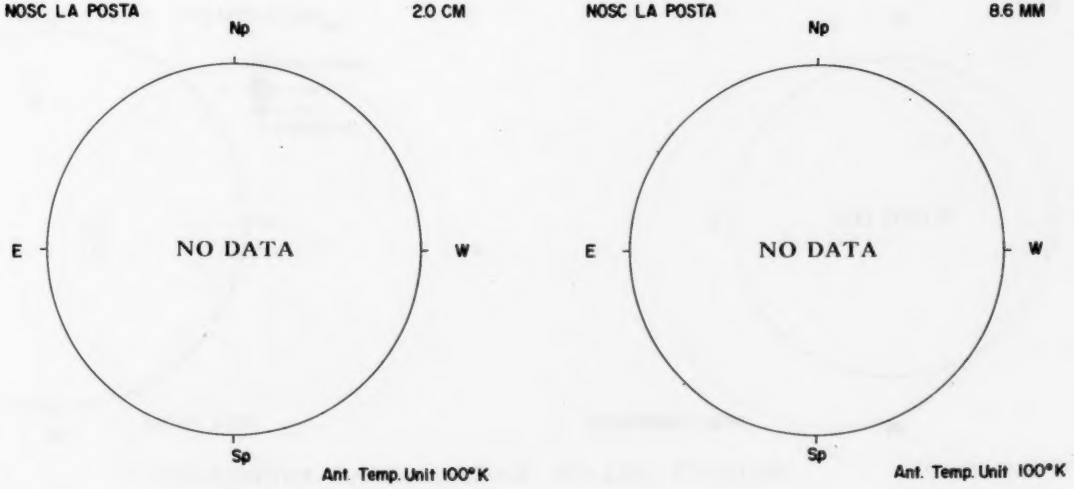
DELTAY = 12.6
DELTAX = 9.5



17.75-19.40 UT

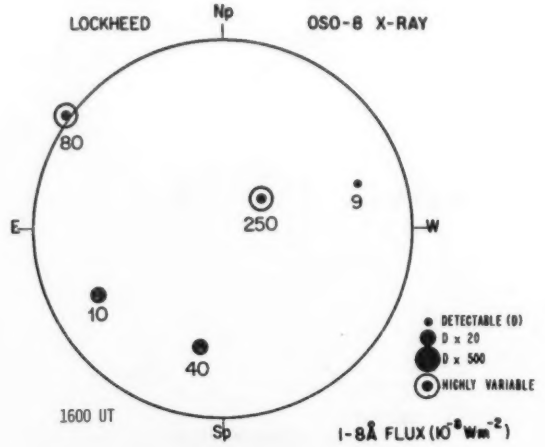
03


BOULDER
Np
Hα
E
W
1431 UT
Sp
BOULDER
Np
SUNSPOTS
522
496
508
508
521
518
526
507
509
509
E
W
1500 UT
Sp
PROMINENCES
1431 UT
McMATH-HULBERT
Np
CALCIUM REPORT
522
520
512
516
513
517
508
496
493
521
518
526
507
498
509
E
W
1350 UT
Sp
GOOD S
96-1700 3.0
07-1200 2.5
08-4800 3.0
09-6000 3.5
21-1800 3.0
22-0300 2.5


NOSC LA POSTA
2.0 CM
Np
E
NO DATA
W
Sp
Ant. Temp. Unit 100°K
NOSC LA POSTA
8.6 MM
Np
E
NO DATA
W
Sp
Ant. Temp. Unit 100°K

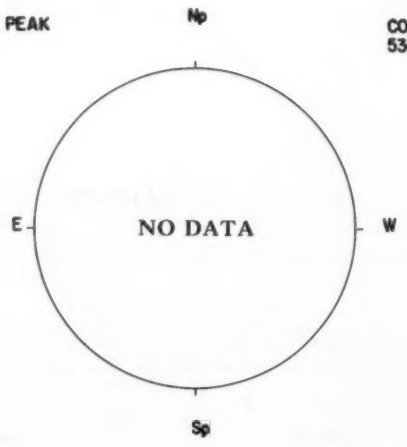
SEPTEMBER 4, 1978 (P = 21.75, B_o = 7.23, L_o = 211.99)

LOCKHEED OSO-8 X-RAY

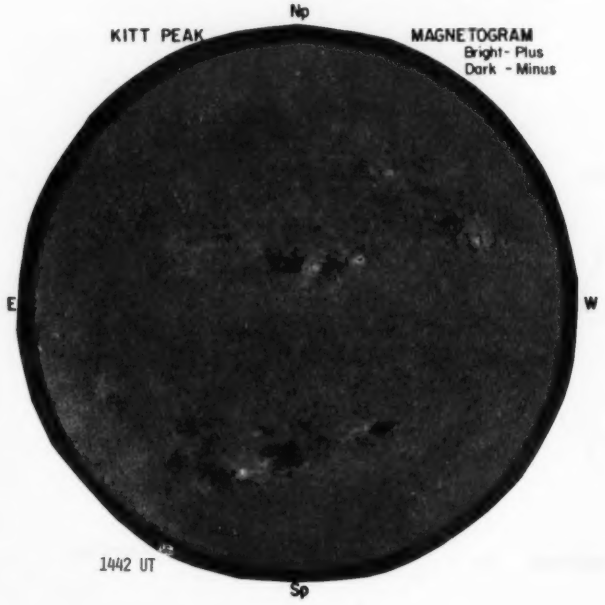


1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

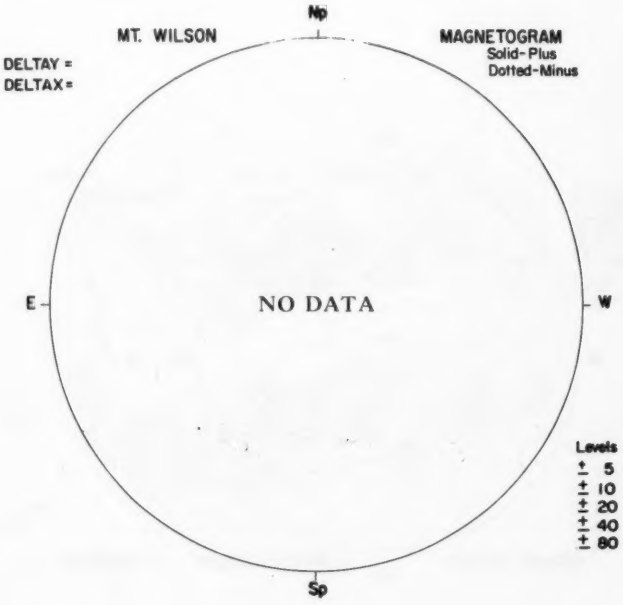


KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



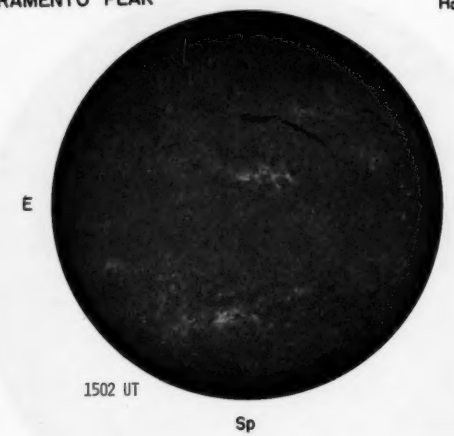
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

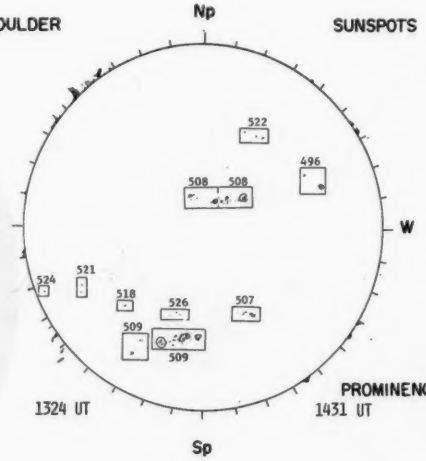


04

SACRAMENTO PEAK



Hα BOULDER



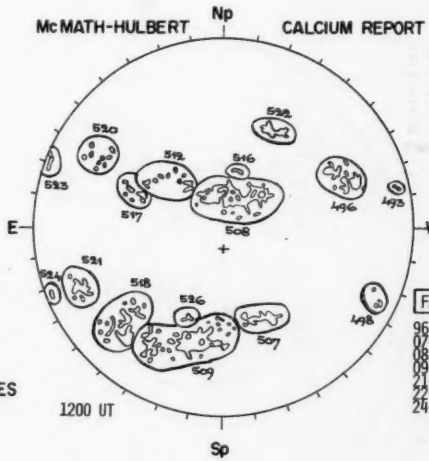
SUNSPOTS

PROMINENCES

1431 UT

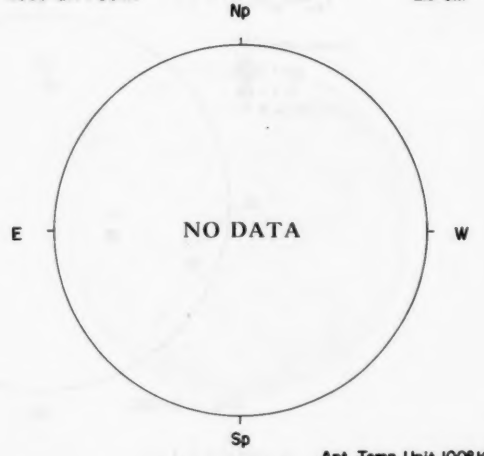
McMATH-HULBERT

CALCIUM REPORT



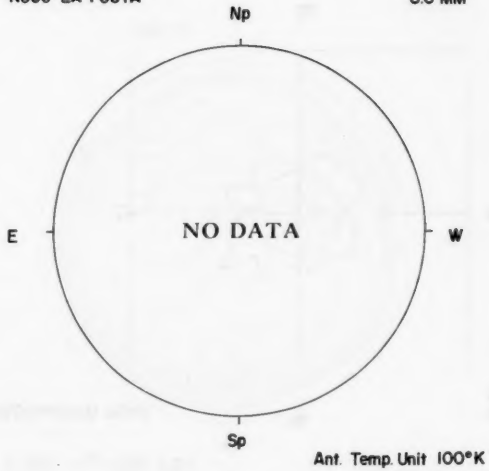
FAIR	S
96-2000	3.0
07-1200	2.5
08-4500	3.0
09-6200	3.5
21-1600	3.0
22-1000	2.5
24-0400	3.0

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100°K

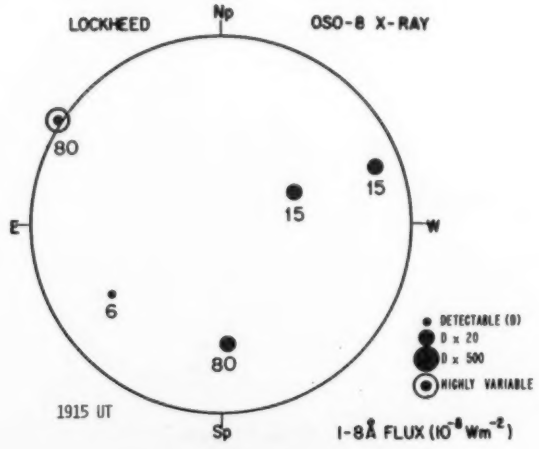
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100°K

SEPTEMBER 5, 1978 (P = 21.99, B_o = 7.24, L_o = 198.79)

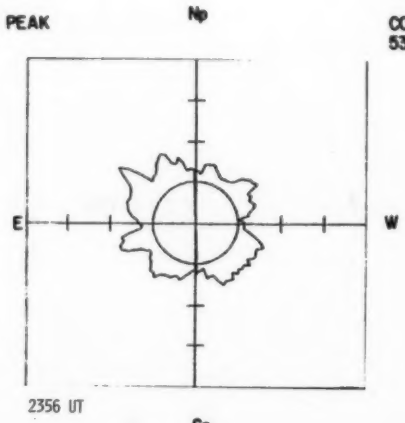
LOCKHEED OSO-8 X-RAY



1915 UT

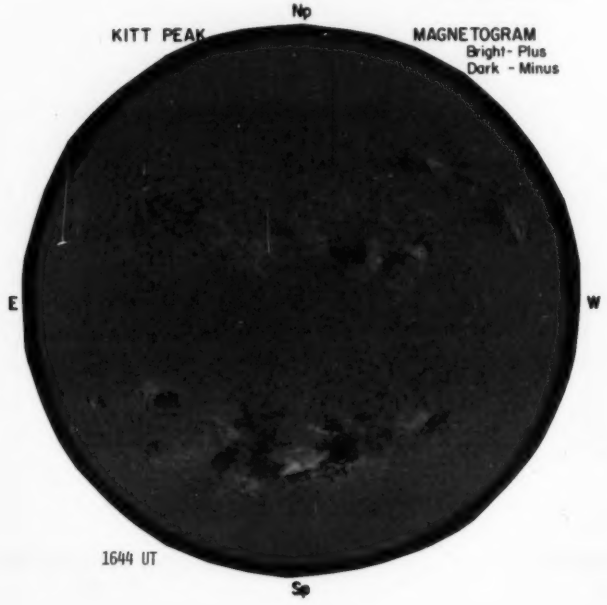
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



2356 UT

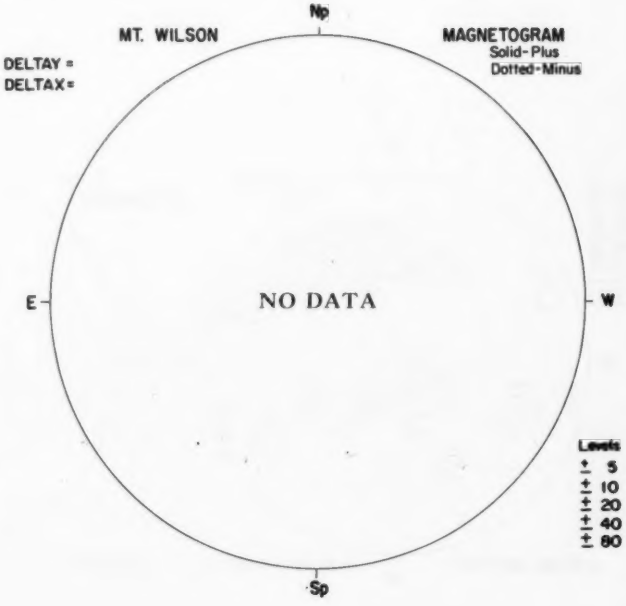
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1644 UT

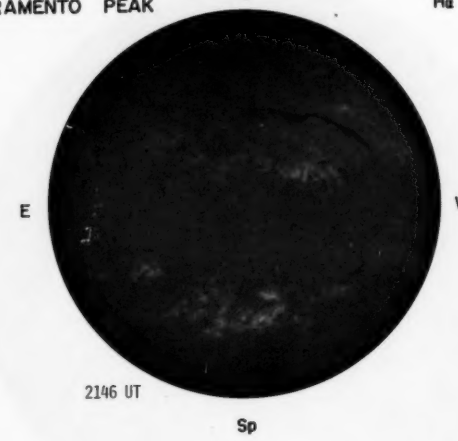
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



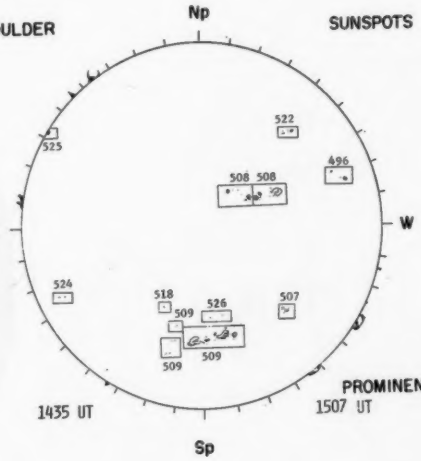
05

SACRAMENTO PEAK



2146 UT

Hα BOULDER



1435 UT

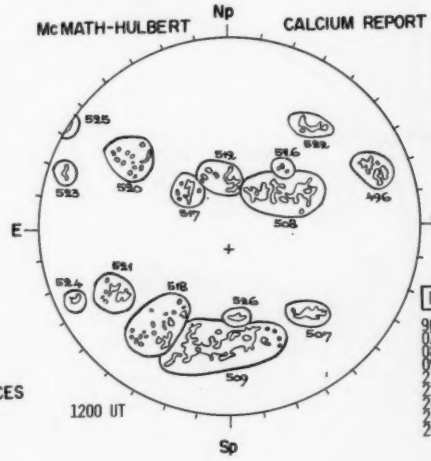
SUNSPOTS

PROMINENCES

1507 UT

McMATH-HULBERT

CALCIUM REPORT

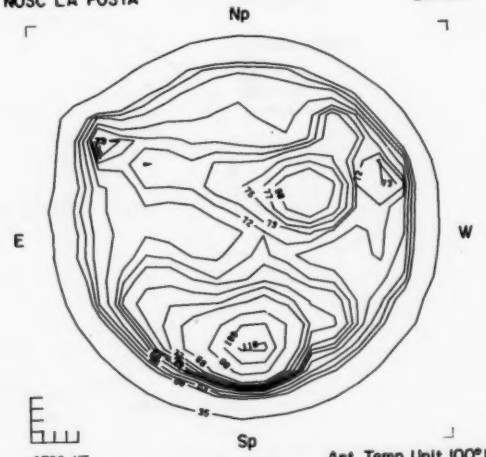


1200 UT

FAIR	D
96-2000	3.0
07-1100	2.5
08-4000	3.5
09-6500	3.5
21-1200	2.5
22-0900	2.5
24-0500	3.0
25-0900	3.5
26-0400	2.5

NOSC LA POSTA

2.0 CM

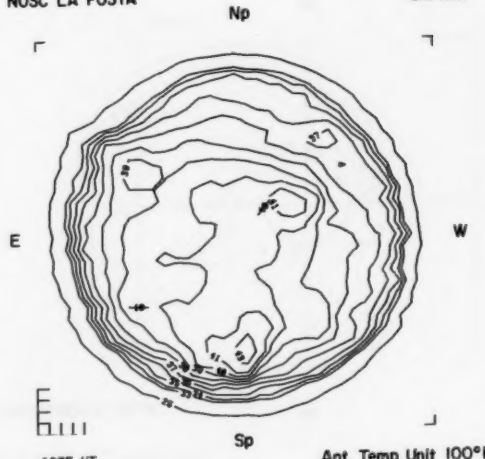


1728 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

8.6 MM

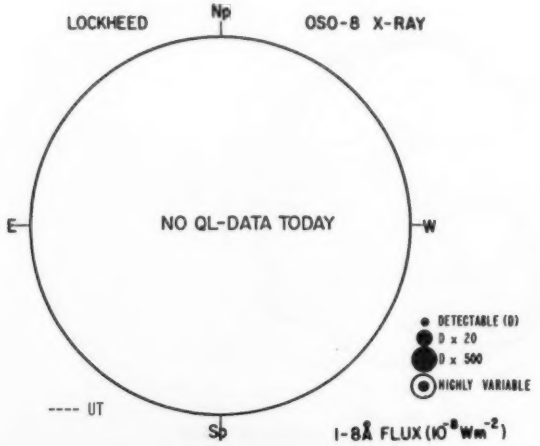


1635 UT

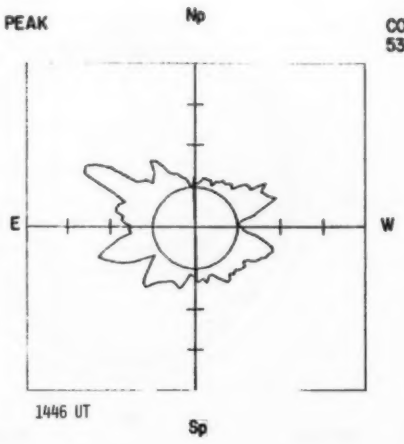
Ant. Temp. Unit 100°K

SEPTEMBER 6, 1978 (P = 22.22, B_o = 7.24, L_o = 185.58)

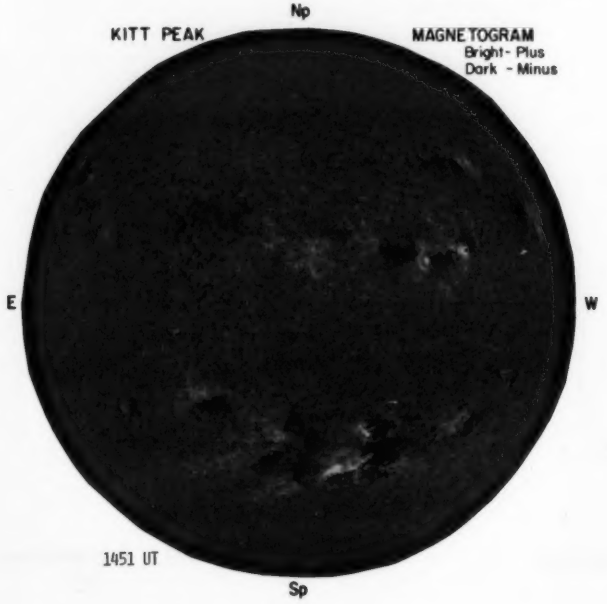
LOCKHEED — OSO-8 X-RAY



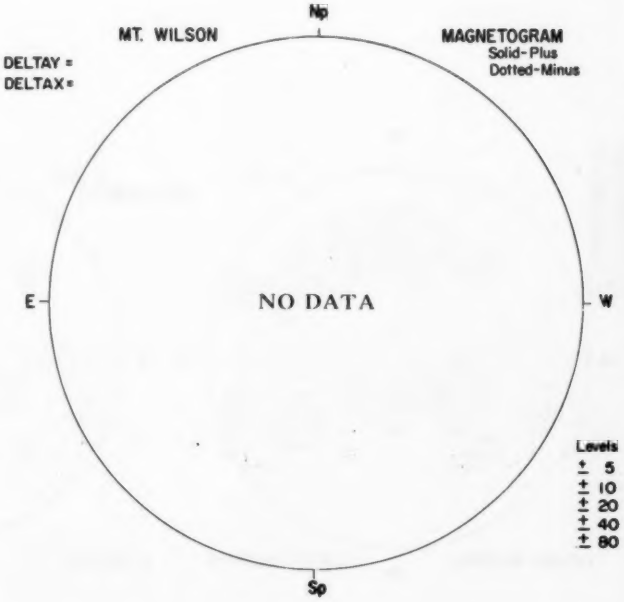
SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus

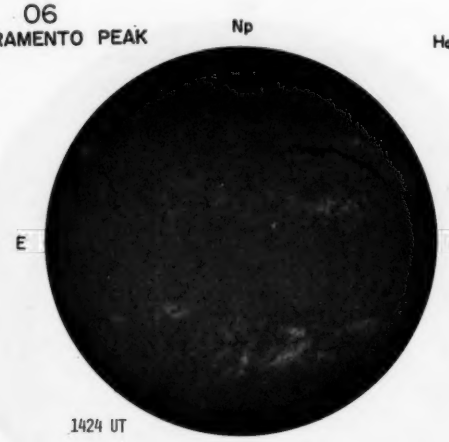


MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =



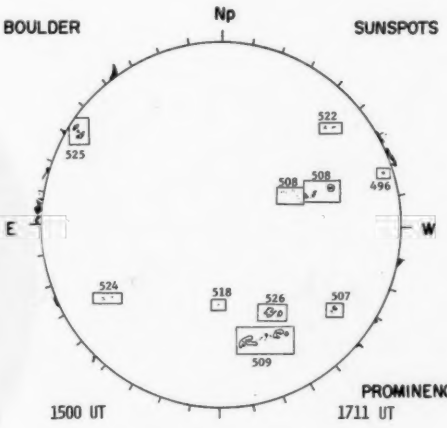
06

SACRAMENTO PEAK



1424 UT

Hα BOULDER



1500 UT

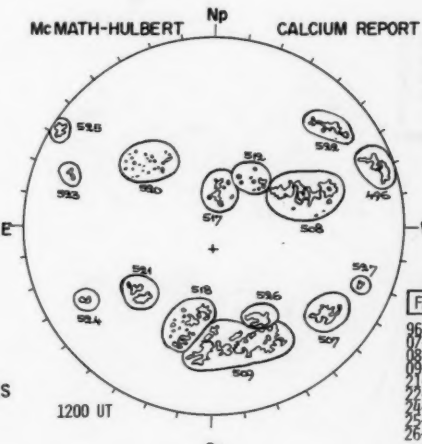
SUNSPOTS

PROMINENCES

1711 UT

McMATH-HULBERT

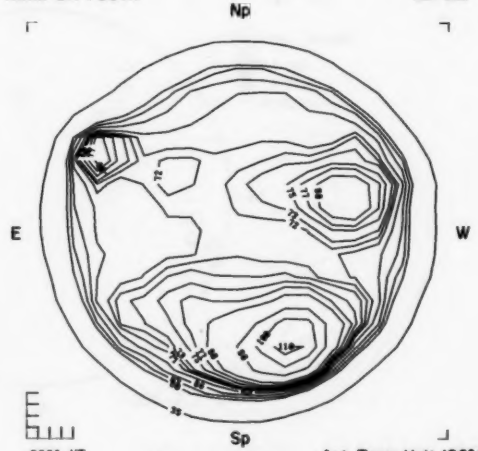
CALCIUM REPORT



1200 UT

FAIR	D
96-2500	2.5
07-1500	2.5
08-2700	2.5
09-0900	2.5
21-1000	2.5
22-1200	2.5
24-0400	2.5
25-1200	2.5
26-1200	2.5

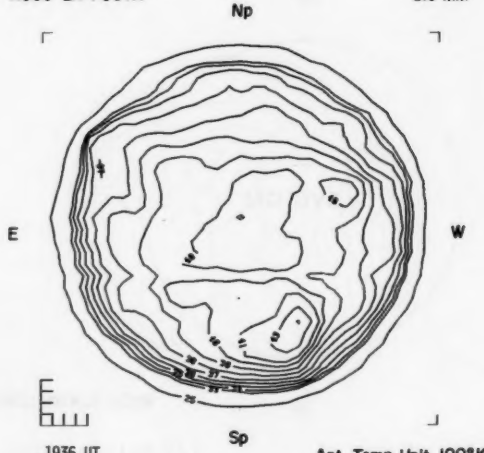
NOSC LA POSTA 2.0 CM



2001 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

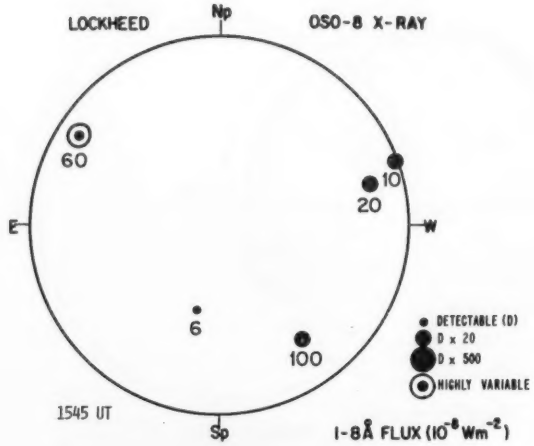


1936 UT

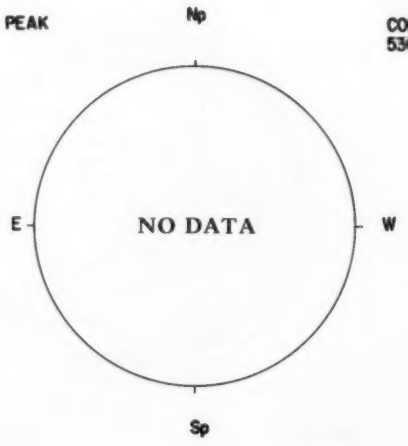
Ant. Temp. Unit 100°K

SEPTEMBER 7, 1978 (P = 22.44, B_0 = 7.25, L_0 = 172.37)

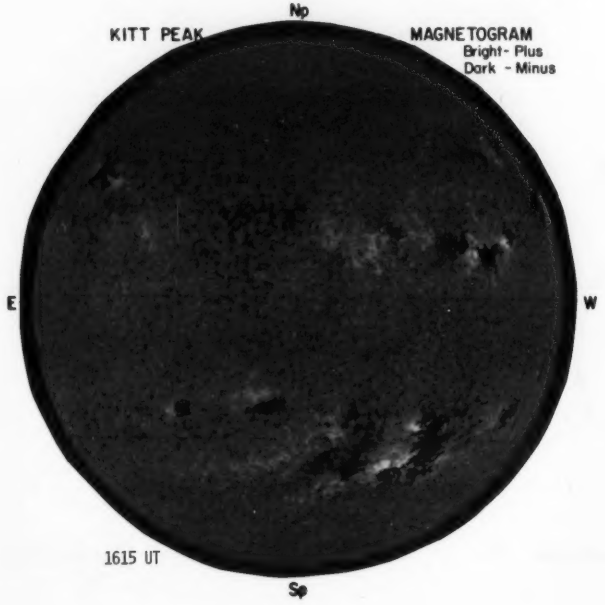
LOCKHEED OSO-8 X-RAY



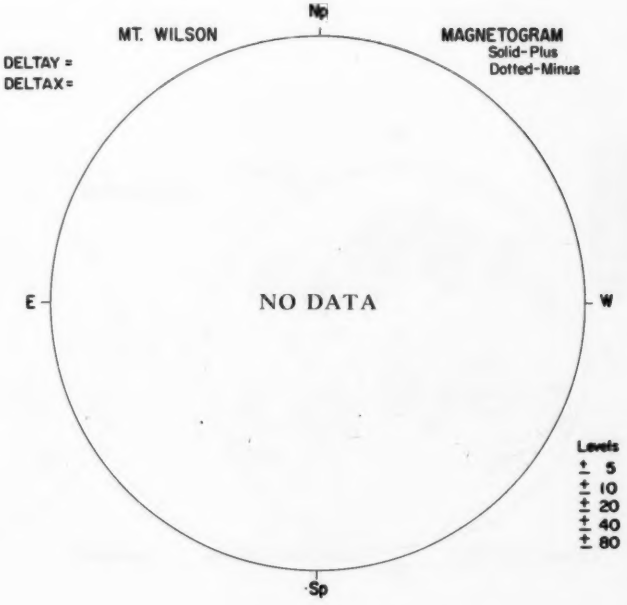
SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

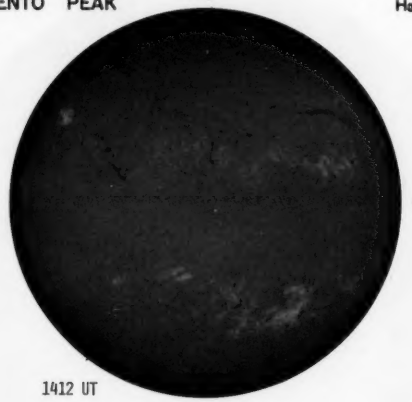


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =



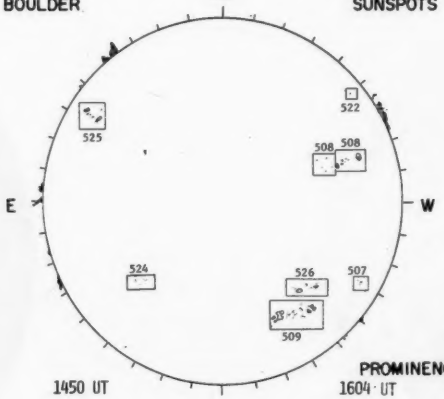
07

SACRAMENTO PEAK



1412 UT

Hα BOULDER



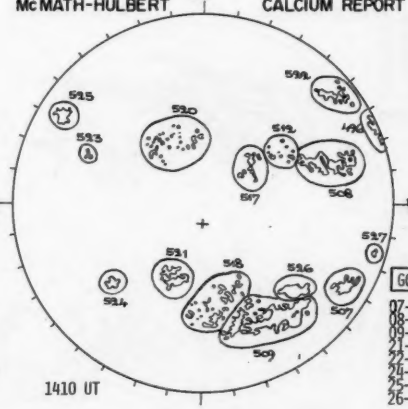
1450 UT

SUNSPOTS

PROMINENCES

1604 UT

McMATH-HULBERT

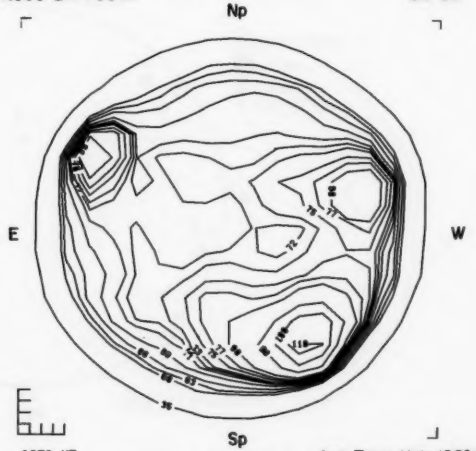


1410 UT

CALCIUM REPORT

GOOD	M
07-1500	2.5
08-3700	3.0
09-7200	3.5
21-1200	2.5
22-1400	2.5
24-0500	2.5
25-1400	4.0
26-1600	3.0

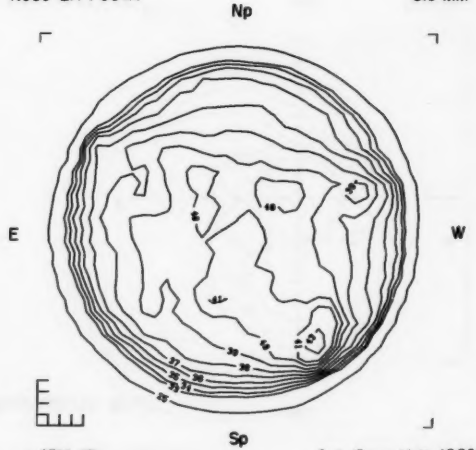
NOSC LA POSTA 2.0 CM



1632 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

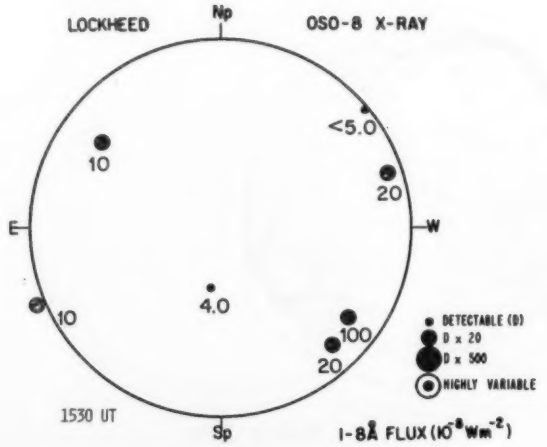


1701 UT

Ant. Temp. Unit 100°K

SEPTEMBER 8, 1978 (P = 22.66, B_o = 7.25, L_o = 159.17)

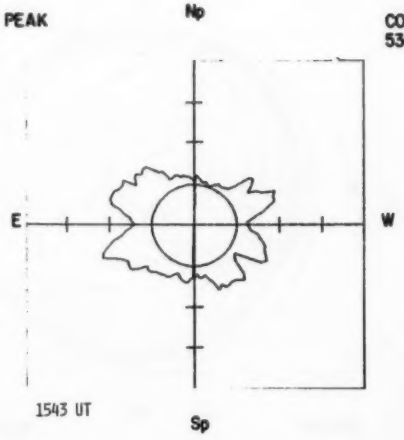
LOCKHEED OSO-8 X-RAY



1530 UT

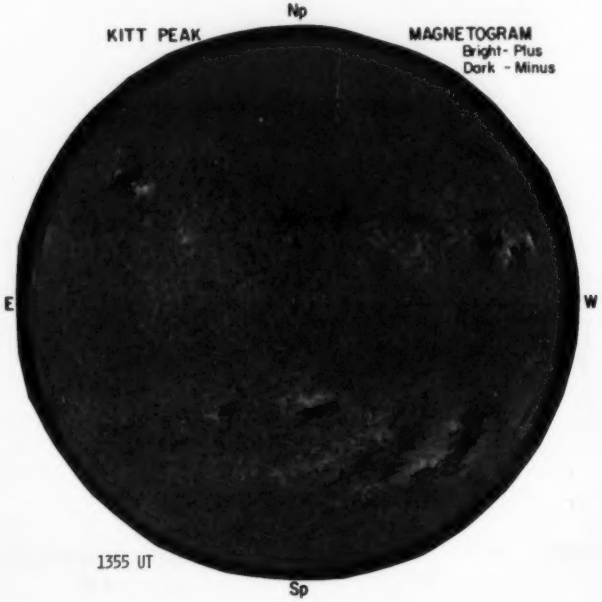
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



1543 UT

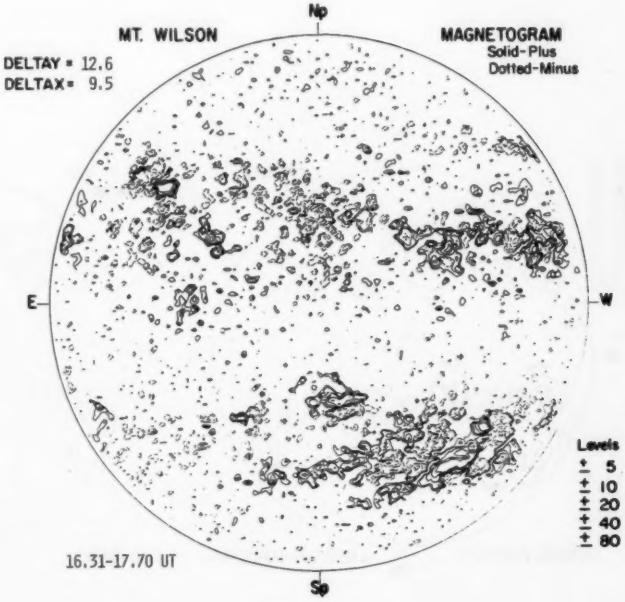
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1355 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

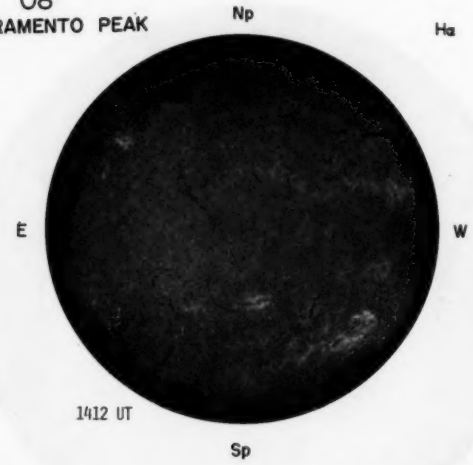
DELTAY = 12.6
DELTAX = 9.5



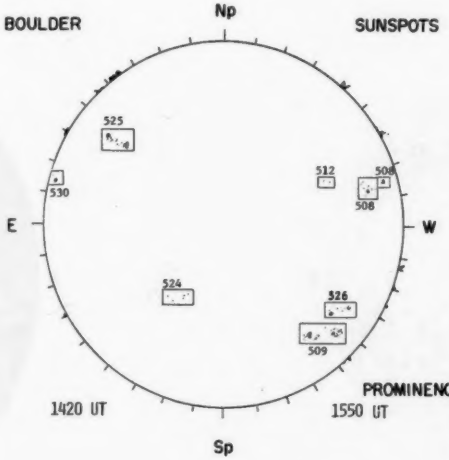
16.31-17.70 UT

08

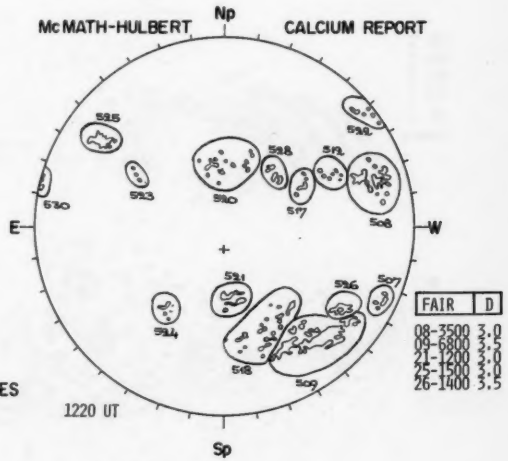
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS

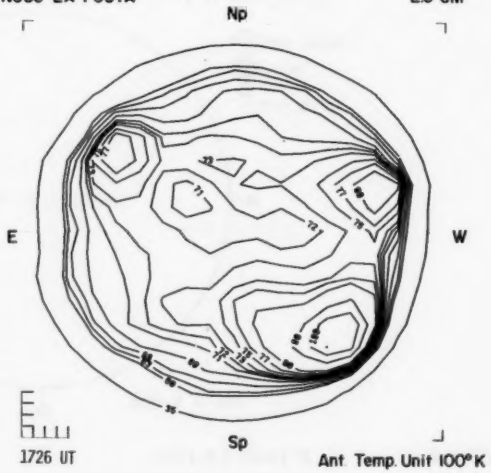


McMATH-HULBERT CALCIUM REPORT

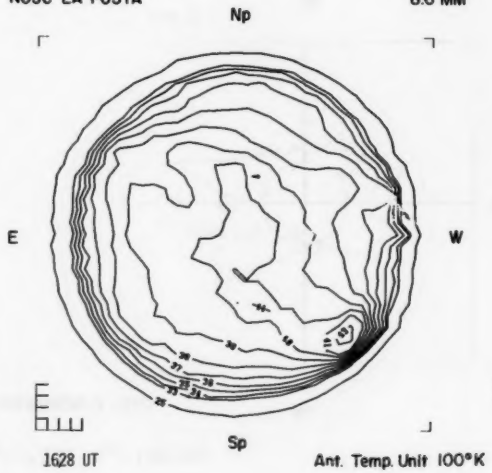
PROMINENCES 1550 UT

FAIR	D
08-3500	3.0
09-0800	3.5
21-1200	3.0
25-1500	3.0
26-1400	3.5

NOSC LA POSTA 2.0 CM

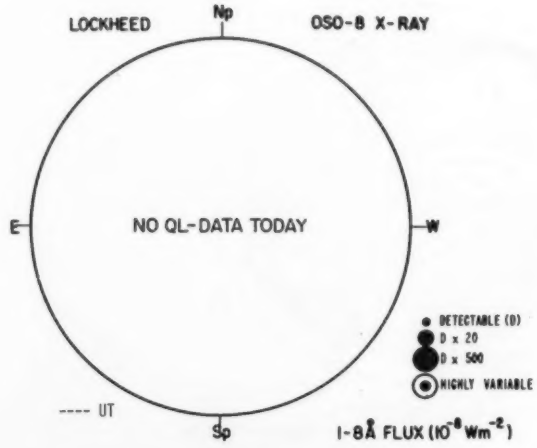


NOSC LA POSTA 8.6 MM

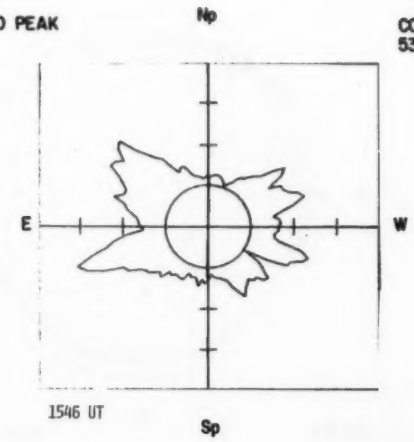


SEPTEMBER 9, 1978 (P = 22.88, B_0 = 7.25, L_0 = 145.96)

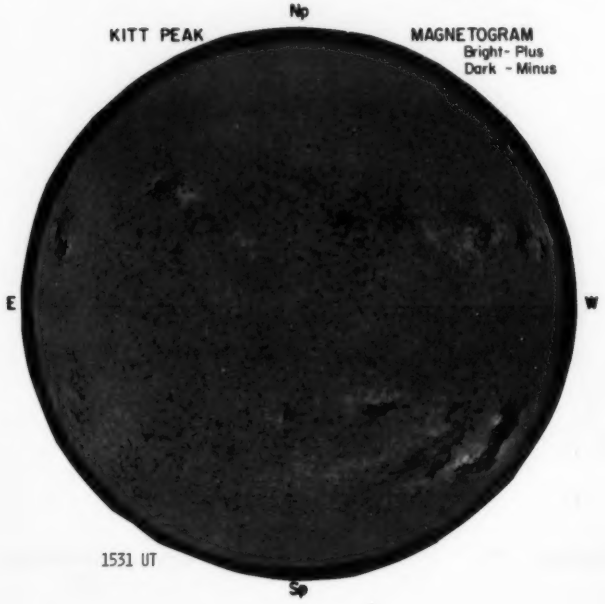
LOCKHEED OSO-8 X-RAY



SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

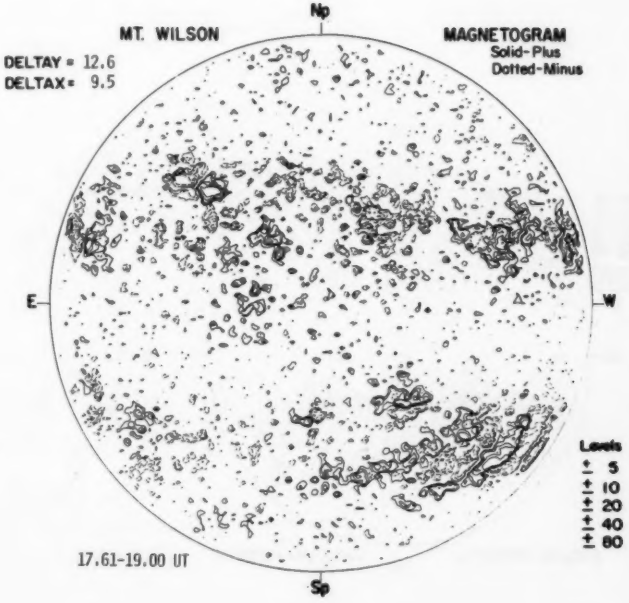


KITT PEAK MAGNETOGRAM Bright - Plus Dark - Minus



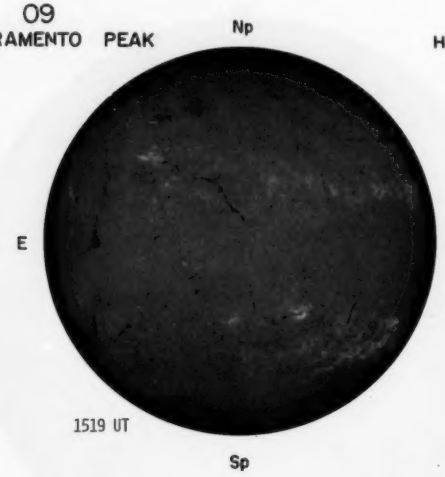
MT. WILSON MAGNETOGRAM Solid - Plus Dotted - Minus

DELTAY = 12.6
DELTAX = 9.5

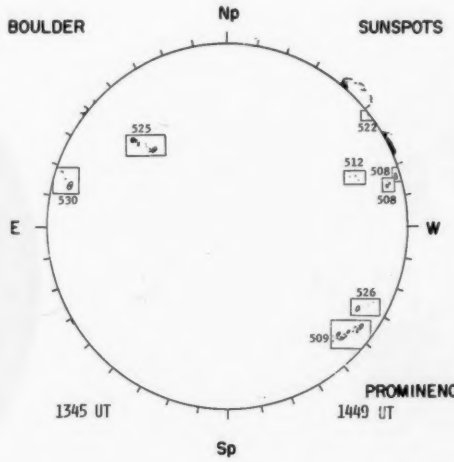


09

SACRAMENTO PEAK



Hα BOULDER

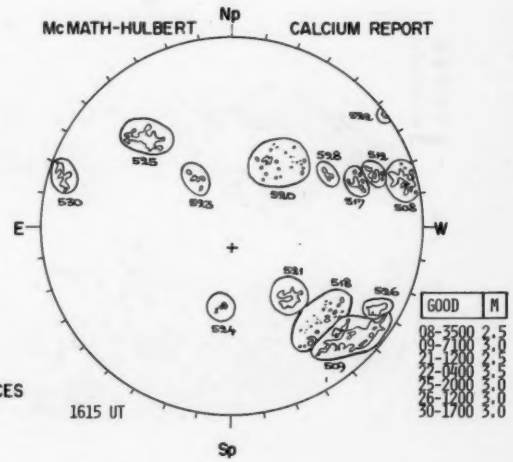


SUNSPOTS

PROMINENCES

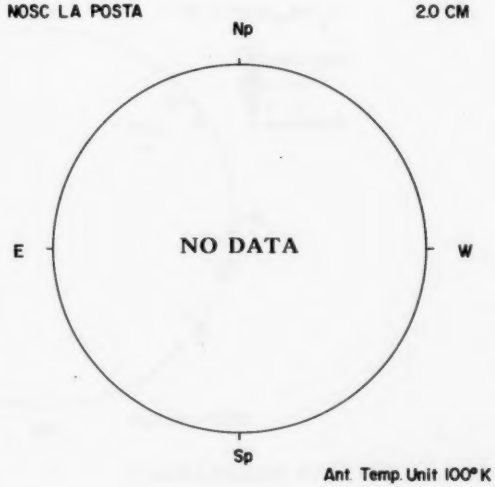
McMATH-HULBERT

CALCIUM REPORT



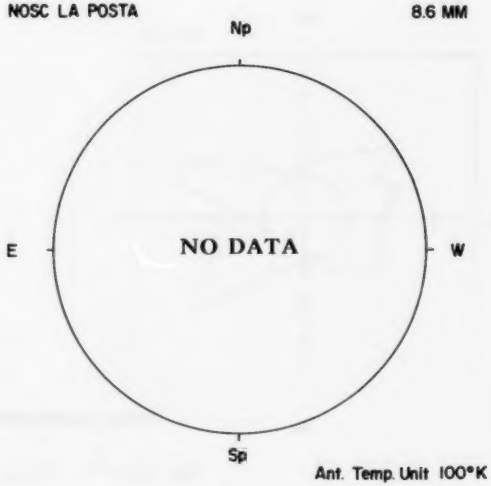
GOOD	M
08-3500	2.5
09-1100	3.2
21-1200	3.2
22-0400	3.2
25-2000	3.0
26-1200	3.0
30-1700	3.0

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100°K

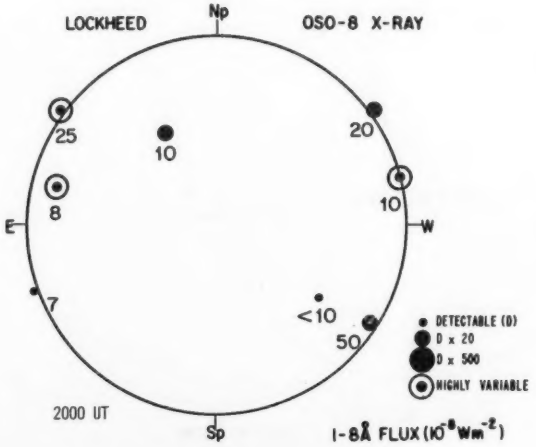
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100°K

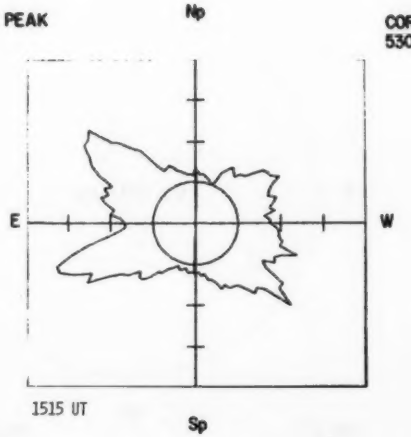
SEPTEMBER 10, 1978 (P = 23.08, B_o = 7.25, L_o = 132.76)

LOCKHEED OSO-8 X-RAY

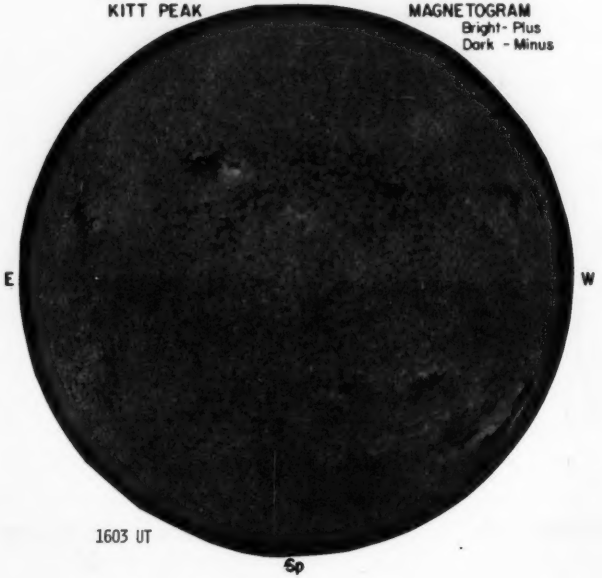


1-8Å FLUX (10^{-8} Wm^{-2})

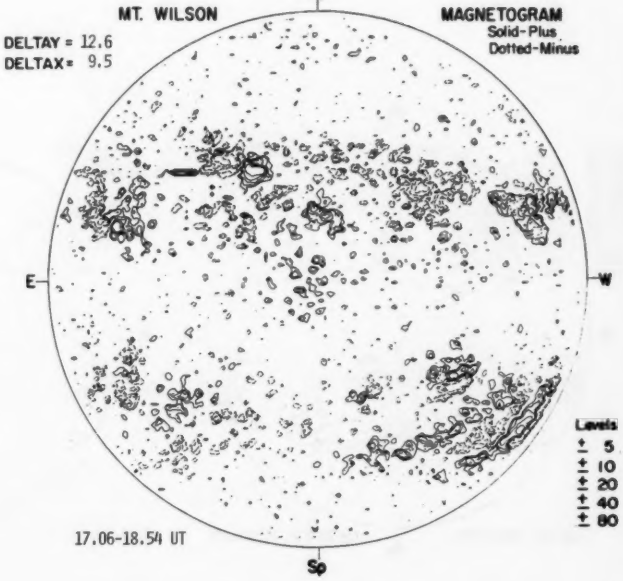
SACRAMENTO PEAK



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

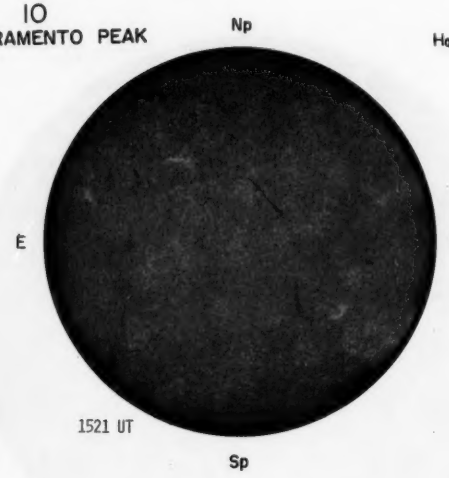


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.5

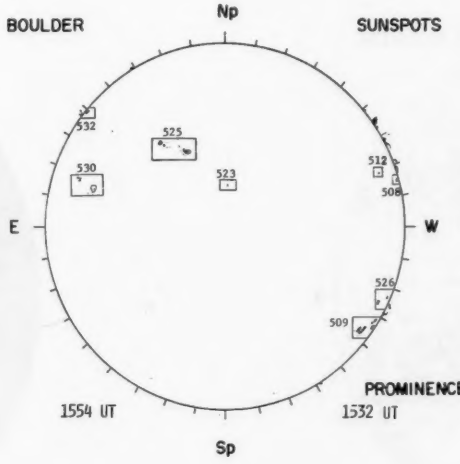


10

SACRAMENTO PEAK



Hα BOULDER



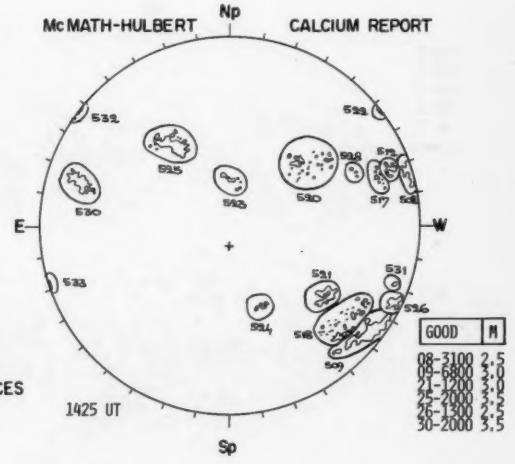
SUNSPOTS

PROMINENCES

1532 UT

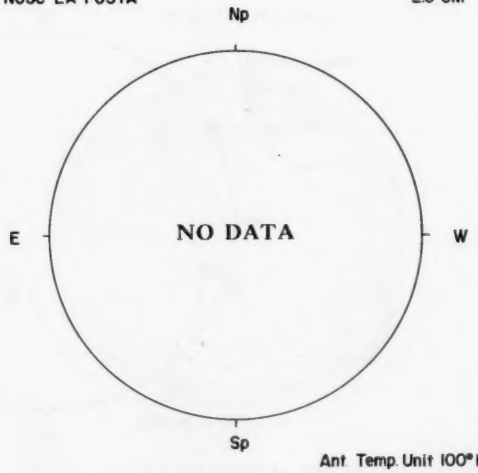
McMATH-HULBERT

CALCIUM REPORT



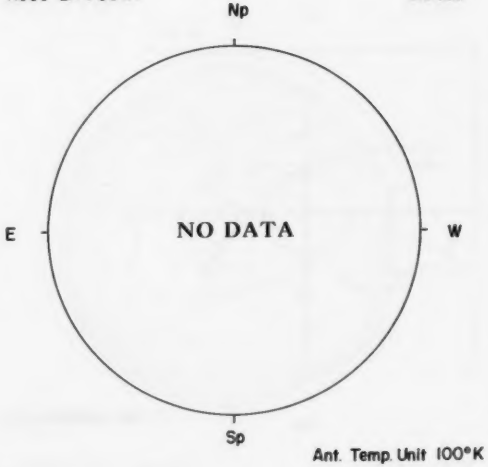
GOOD	M
08-3100	2.5
09-6800	3.0
21-1200	3.0
25-2000	3.5
26-1300	3.5
30-2000	3.5

NOSC LA POSTA 2.0 CM



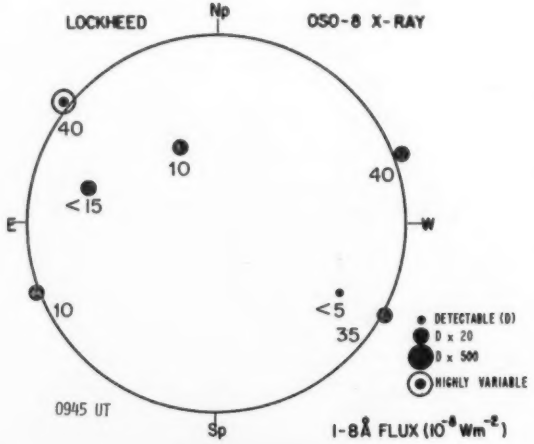
Ant. Temp. Unit 100°K

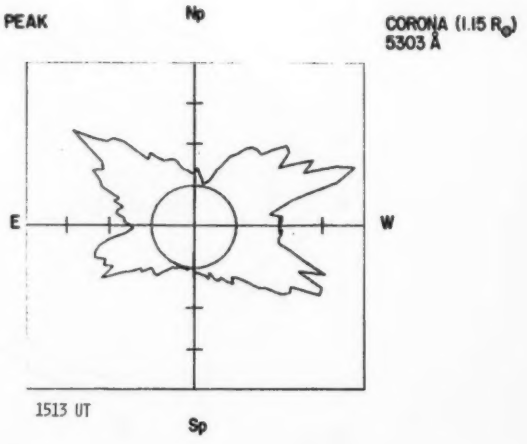
NOSC LA POSTA 8.6 MM

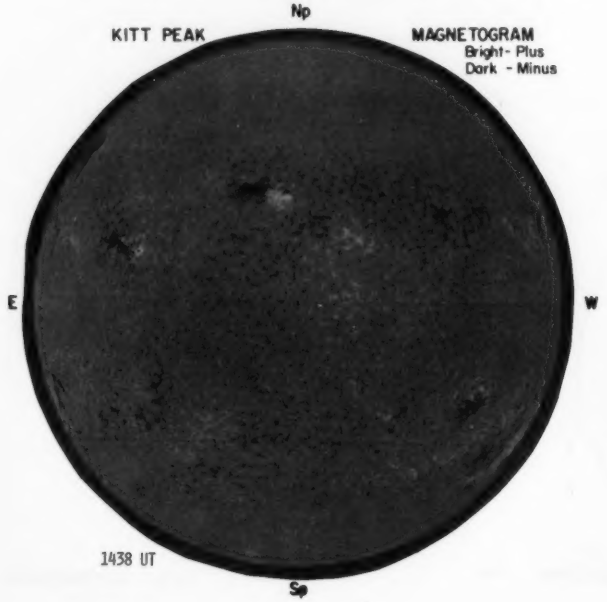


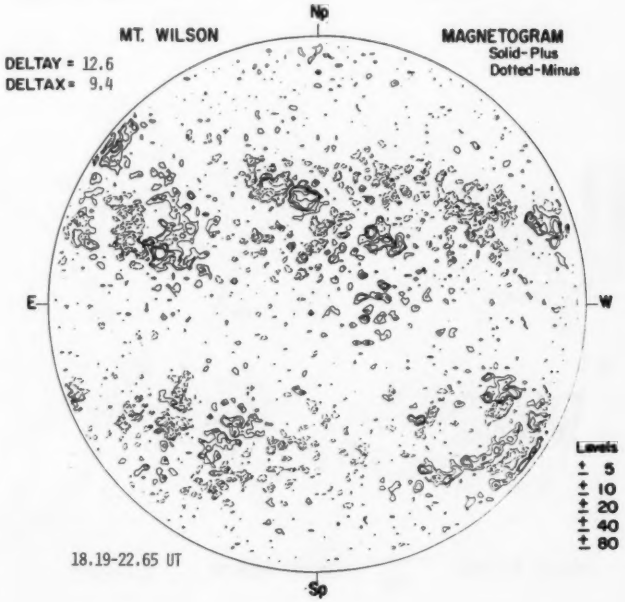
Ant. Temp. Unit 100°K

SEPTEMBER 11, 1978 (P = 23.29, B_o = 7.24, L_o = 119.55)

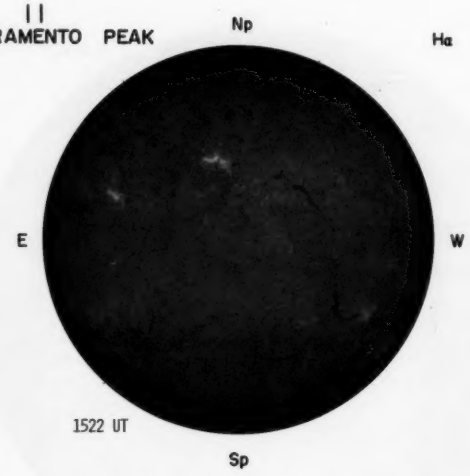




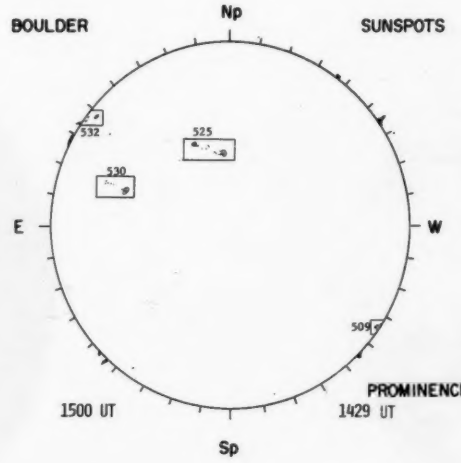




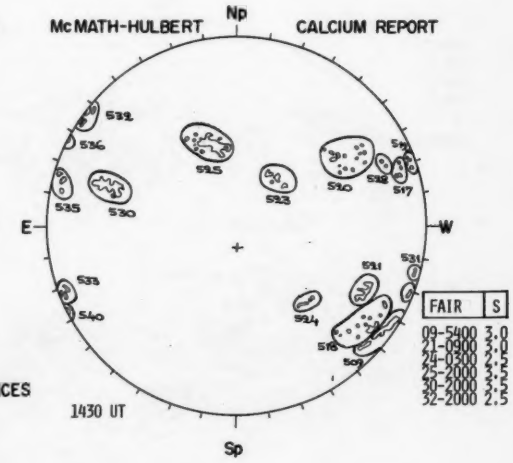
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS

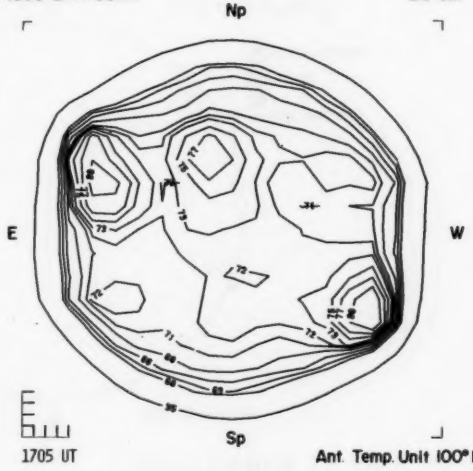


McMATH-HULBERT CALCIUM REPORT

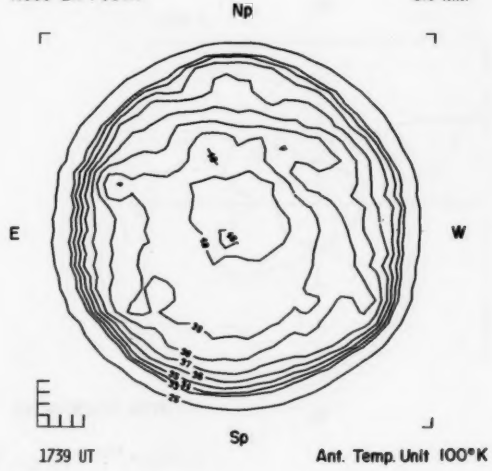
PROMINENCES

1430 UT

NOSC LA POSTA 2.0 CM

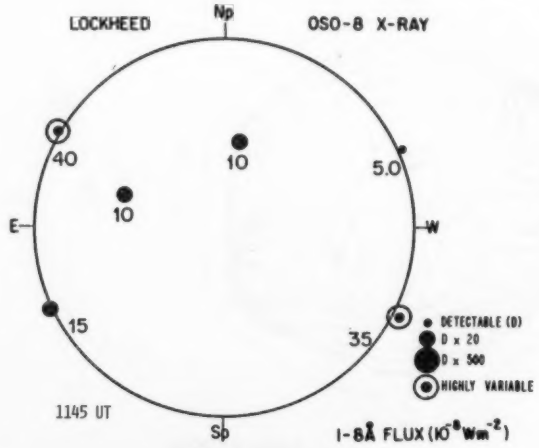


NOSC LA POSTA 8.6 MM



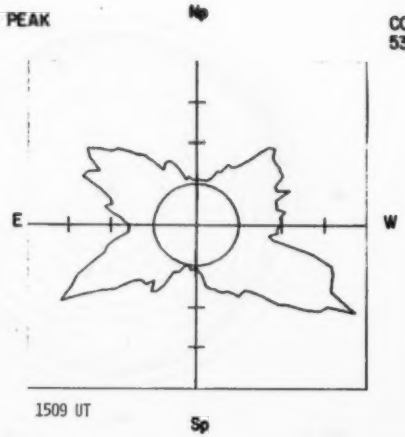
SEPTEMBER 12, 1978 (P = 23.48, B_o = 7.24, L_o = 106.35)

LOCKHEED OSO-8 X-RAY



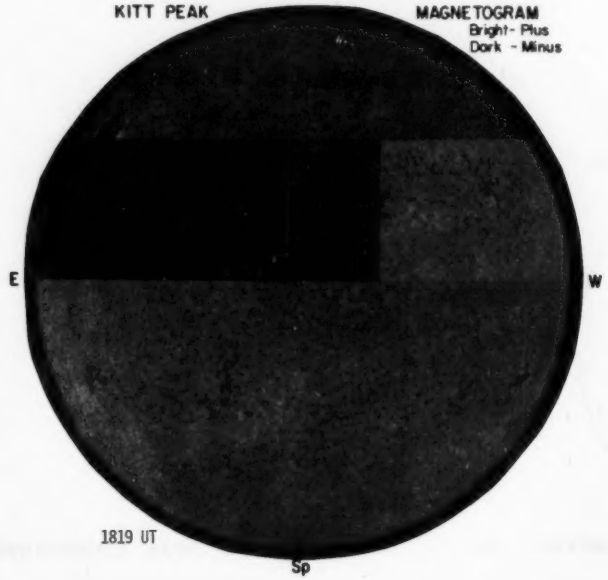
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK



KITT PEAK MAGNETOGRAM

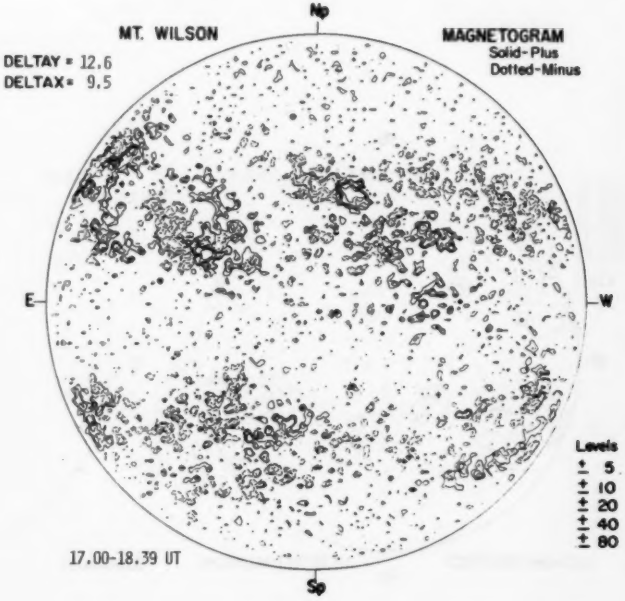
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM

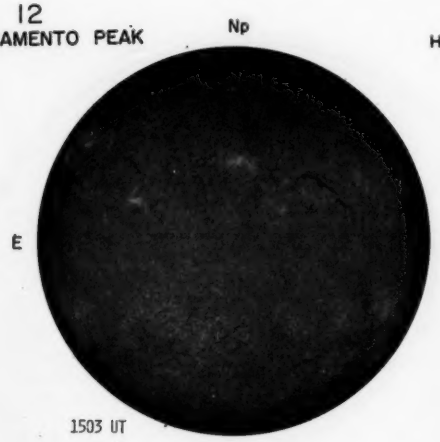
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.5

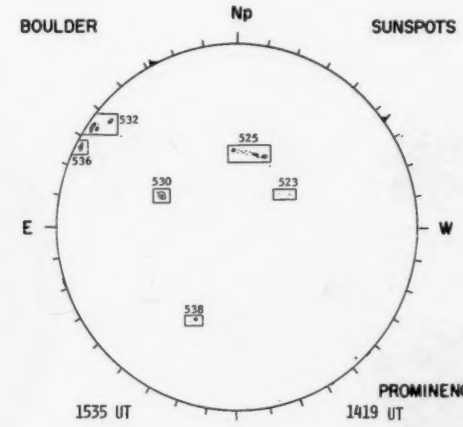


12

SACRAMENTO PEAK



Hα BOULDER



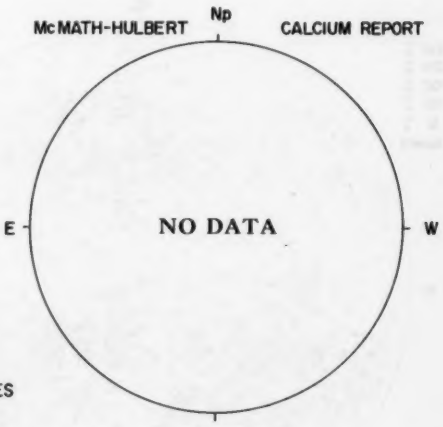
SUNSPOTS

PROMINENCES

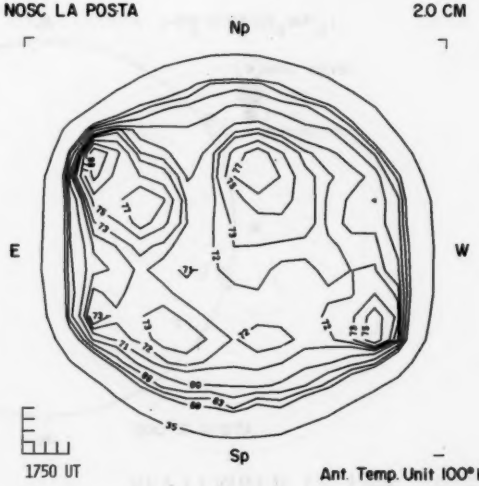
1419 UT

McMATH-HULBERT

CALCIUM REPORT

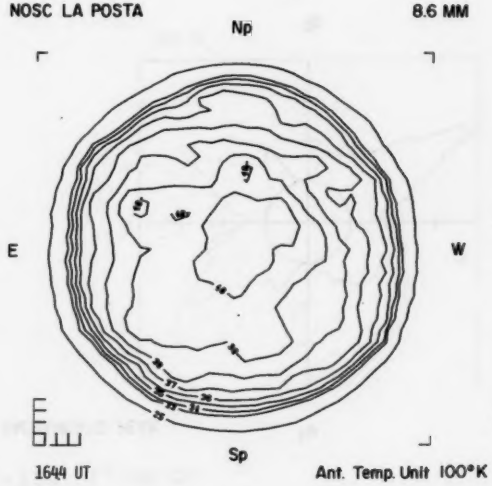


NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100°K

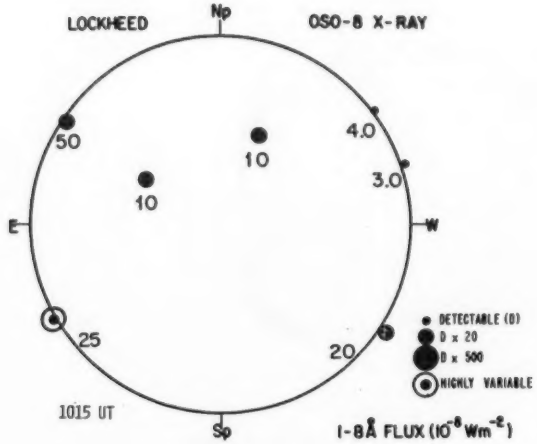
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100°K

SEPTEMBER 13, 1978 (P = 23.67, B_o = 7.23, L_o = 93.15)

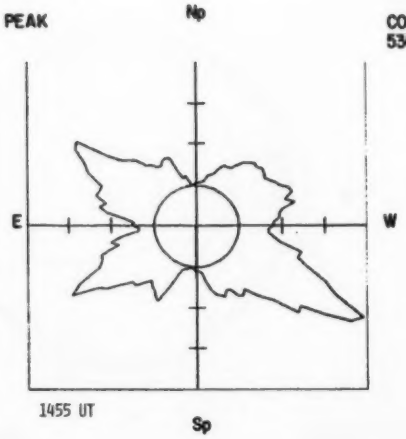
LOCKHEED OSO-8 X-RAY



1015 UT

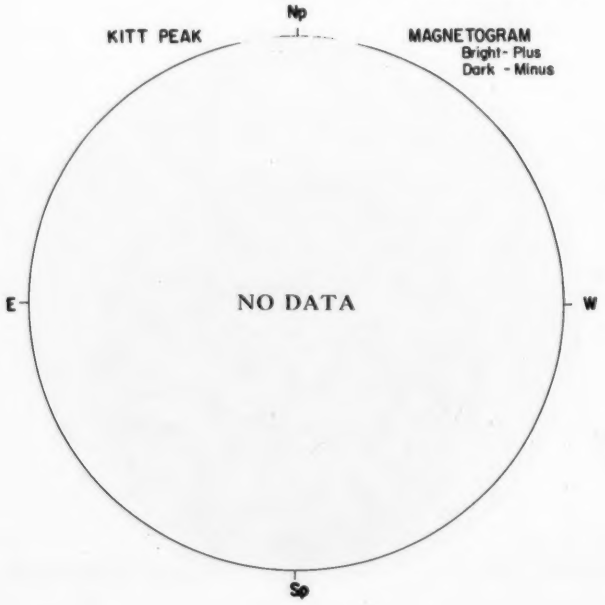
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK



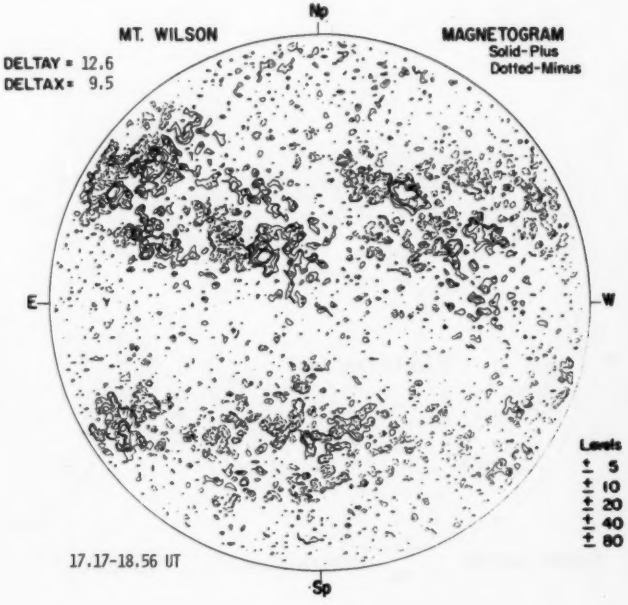
1455 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

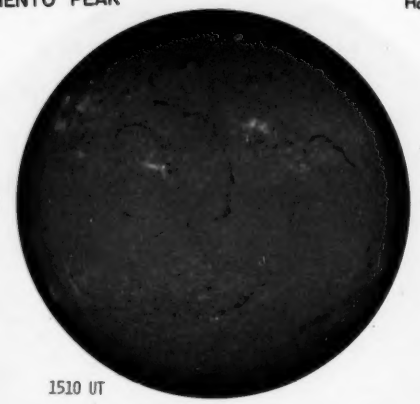
DELTAY = 12.6
DELTAX = 9.5



17.17-18.56 UT

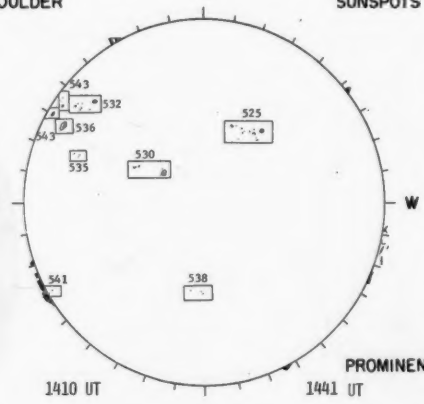
13

SACRAMENTO PEAK



1510 UT

Hα BOULDER



1410 UT

SUNSPOTS

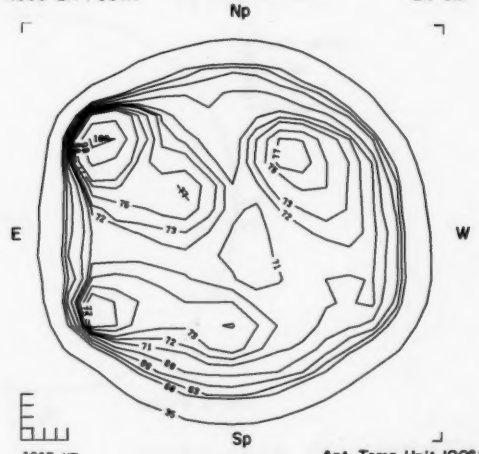
PROMINENCES

1441 UT

McMATH-HULBERT

CALCIUM REPORT

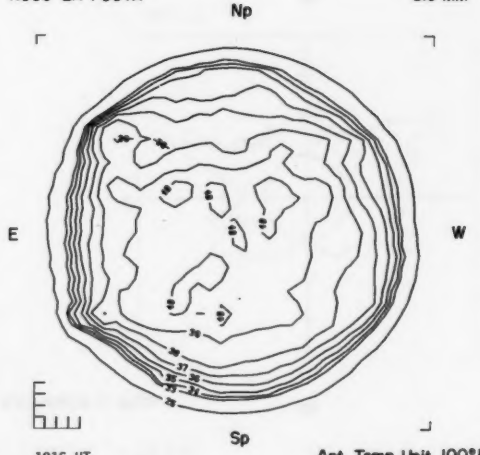
NOSC LA POSTA 2.0 CM



1917 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM



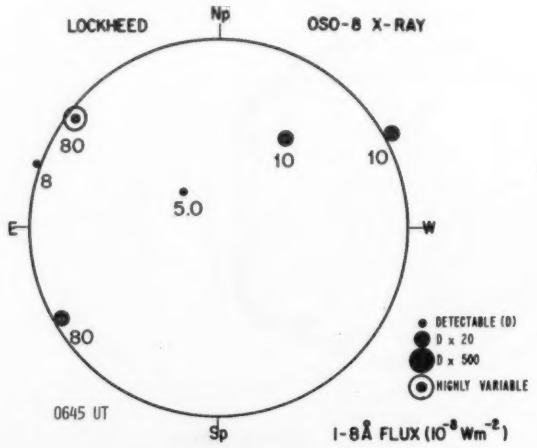
1816 UT

Ant. Temp. Unit 100°K

71
Sep 78

SEPTEMBER 14, 1978 (P = 23.85, B_0 = 7.22, L_0 = 79.94)

LOCKHEED OSO-8 X-RAY

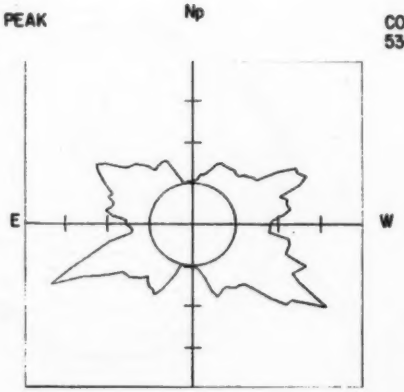


0645 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

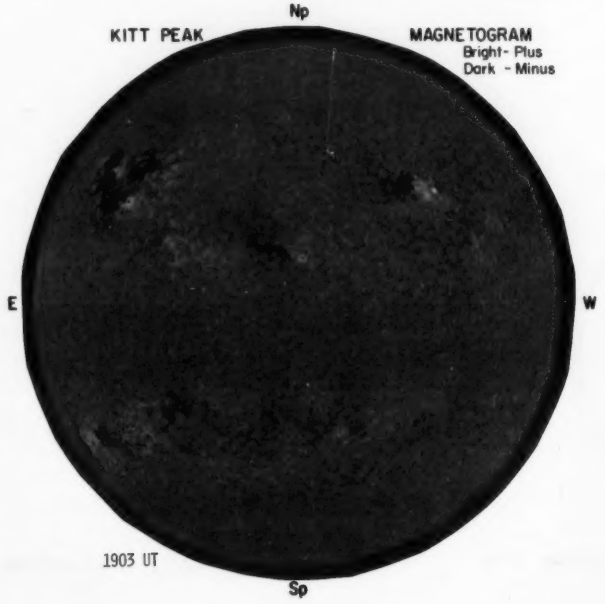
CORONA (1.15 $R_\odot$)
5303 Å



1441 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

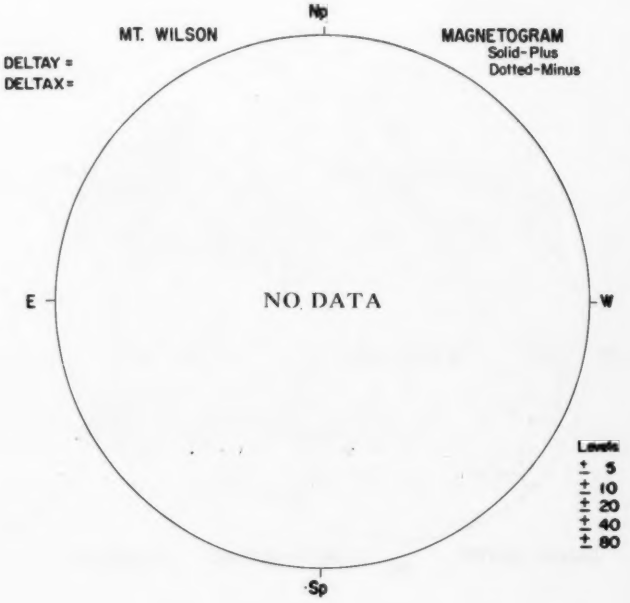


1903 UT

MT. WILSON

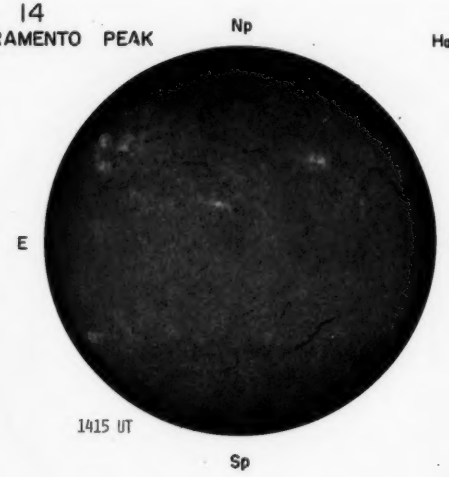
MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

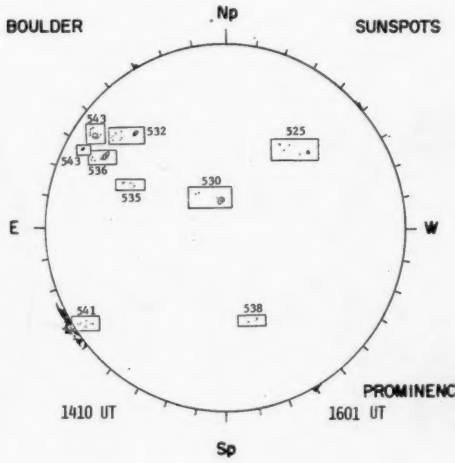


14

SACRAMENTO PEAK



Hα BOULDER



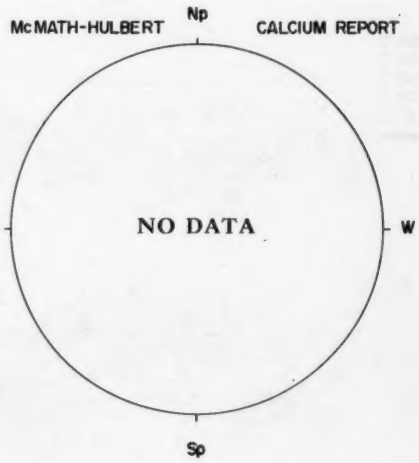
SUNSPOTS

PROMINENCES

1601 UT

McMATH-HULBERT

CALCIUM REPORT



NOSC LA POSTA

Np

2.0 CM

NO DATA

E

WEATHER

W

Sp

---- UT

Ant. Temp. Unit 100°K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

WEATHER

W

Sp

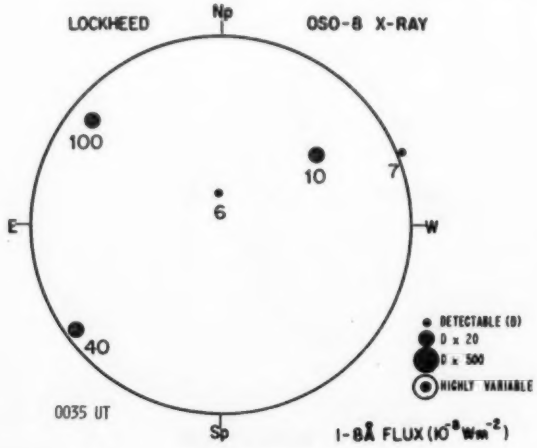
---- UT

Ant. Temp. Unit 100°K

73
Sep 78

SEPTEMBER 15, 1978 (P = 24.03, B_o = 7.21, L_o = 66.74)

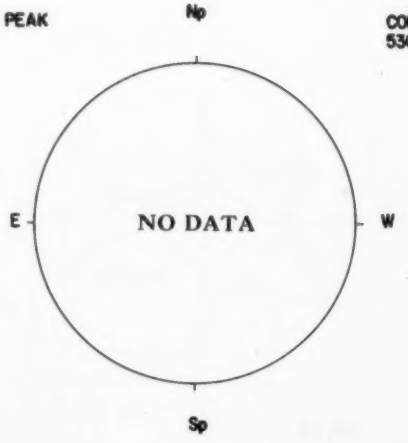
LOCKHEED OSO-8 X-RAY



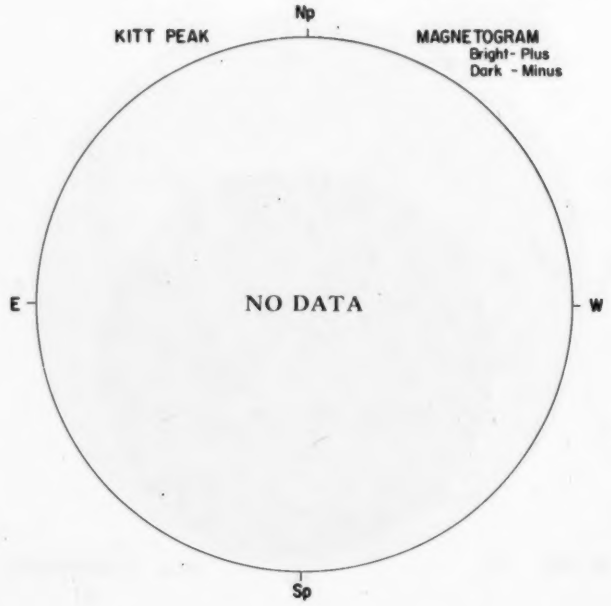
0035 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

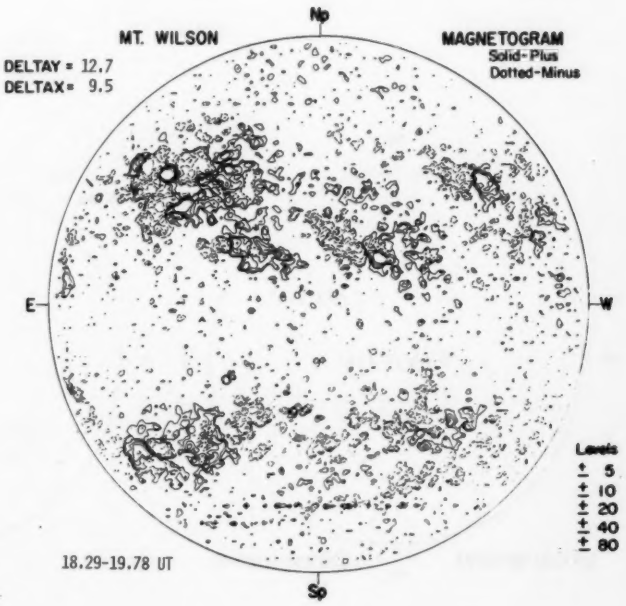


KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

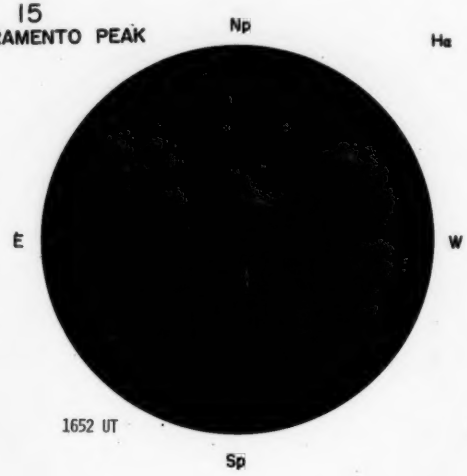
DELTAY = 12.7
DELTAX = 9.5



18.29-19.78 UT

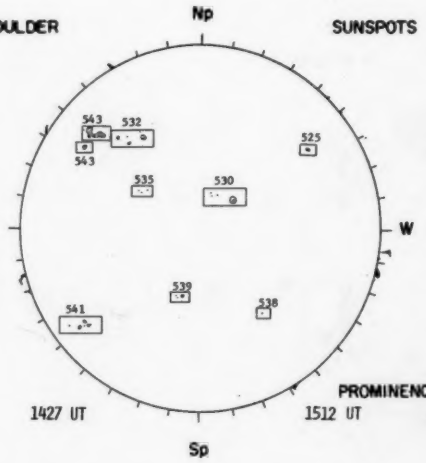
15

SACRAMENTO PEAK



1652 UT

Hα BOULDER



1427 UT

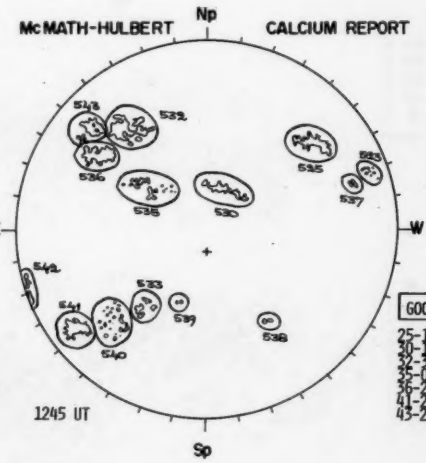
SUNSPOTS

PROMINENCES

1512 UT

McMATH-HULBERT

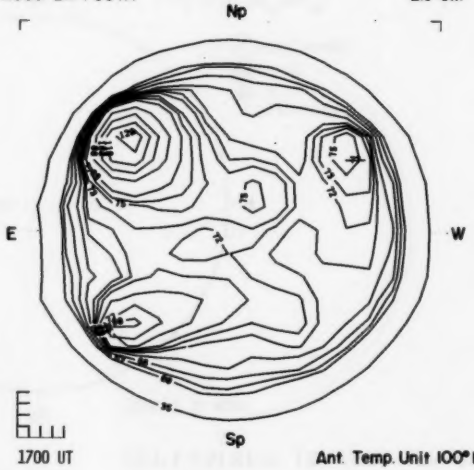
CALCIUM REPORT



1245 UT

GOOD	M
25-1800	3.0
27-1700	3.0
30-1400	3.0
32-1300	3.0
34-0700	2.5
36-2500	3.5
41-2800	3.5
43-2400	4.0

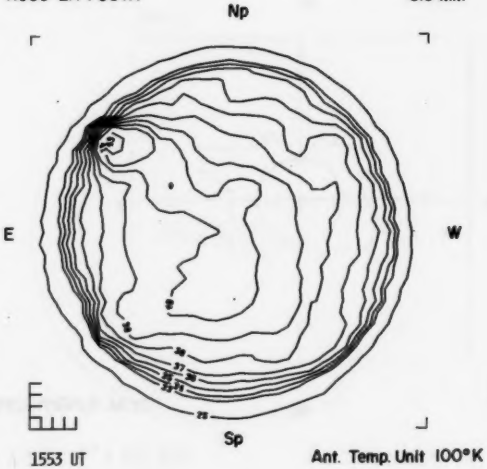
NOSC LA POSTA 2.0 CM



1700 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM



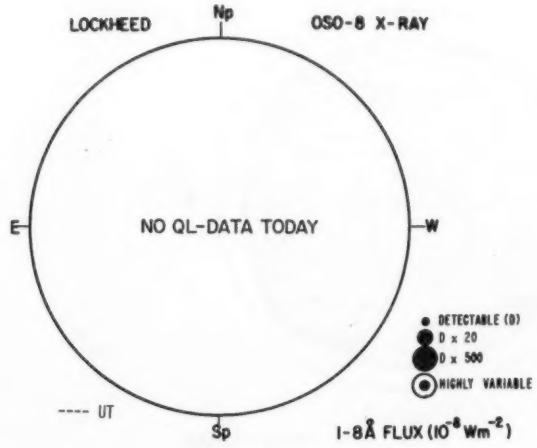
1553 UT

Ant. Temp. Unit 100°K

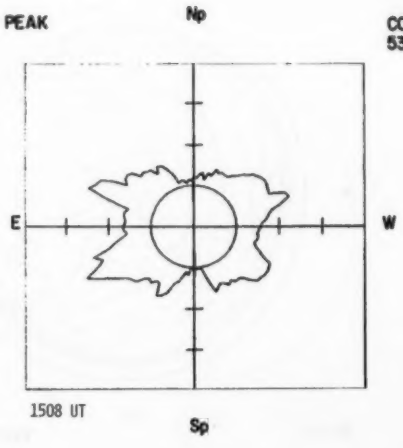
75
Sep 78

SEPTEMBER 16, 1978 (P = 24.20, B_o = 7.19, L_o = 53.54)

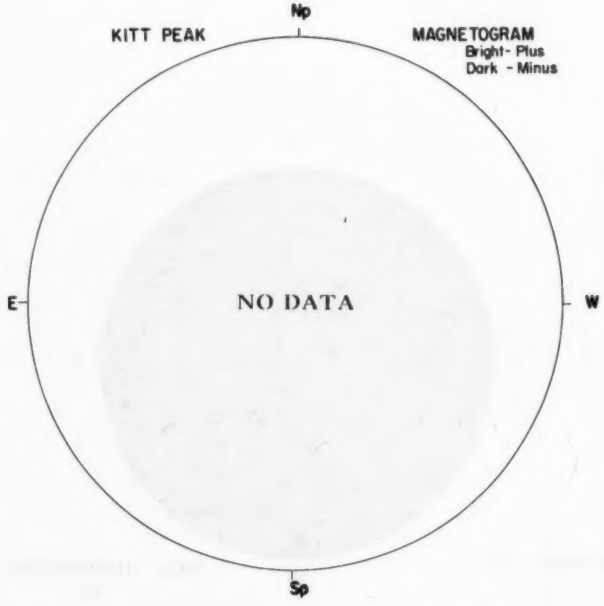
LOCKHEED OSO-8 X-RAY



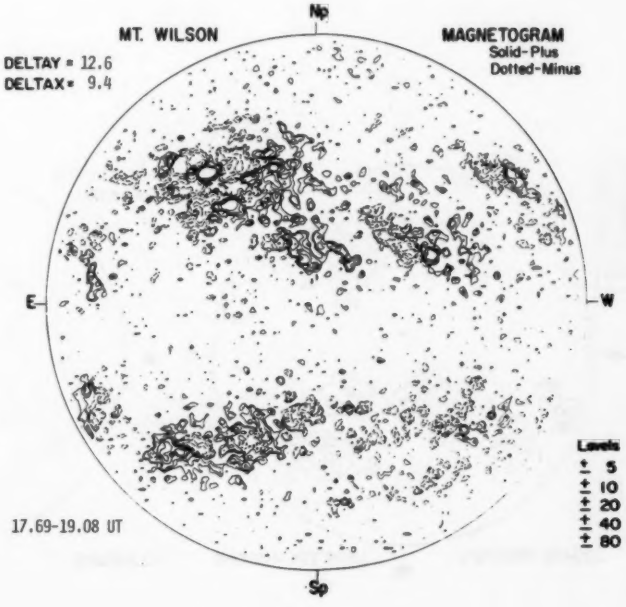
SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

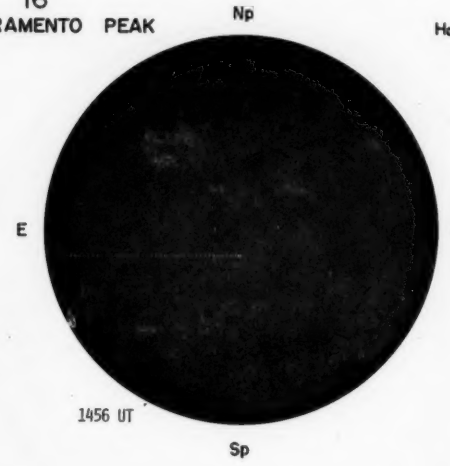


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4

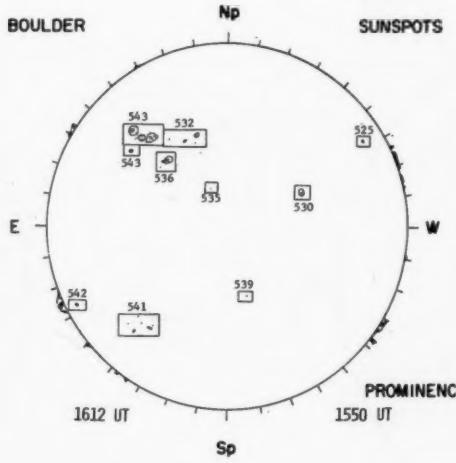


16

SACRAMENTO PEAK



Hα BOULDER

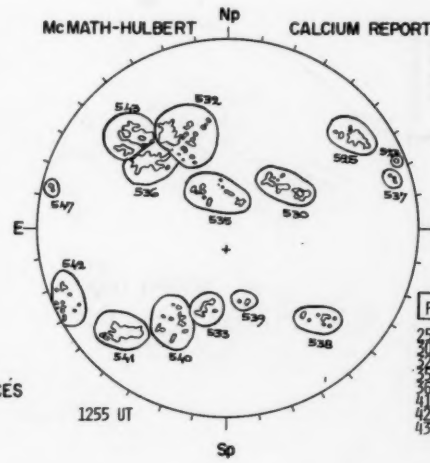


SUNSPOTS

PROMINENCES

1550 UT

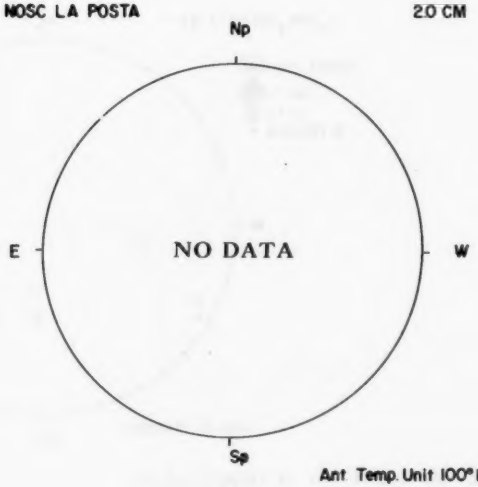
McMATH-HULBERT



CALCIUM REPORT

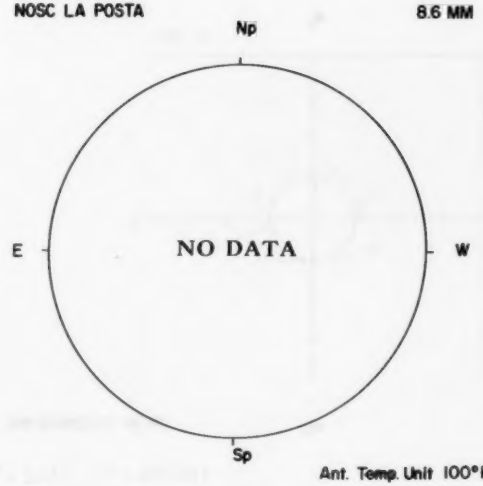
FAIR	D
25-1800	3.0
30-1200	2.5
32-2800	3.5
33-0800	4.0
36-2500	3.5
41-2800	3.5
42-1500	3.5
43-2200	3.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM



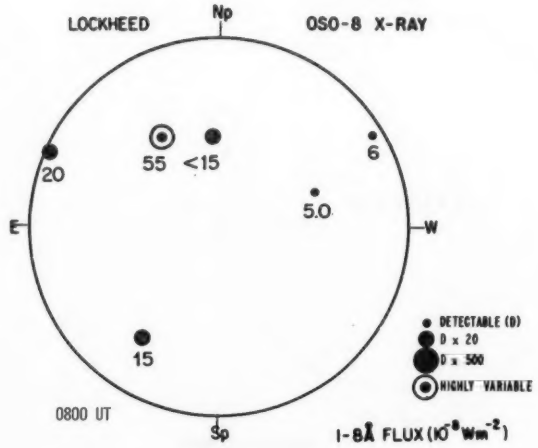
Ant. Temp. Unit 100°K

77
Sep 78

SEPTEMBER 17, 1978 (P = 24.37, B_o = 7.17, L_o = 40.34)

LOCKHEED

OSO-8 X-RAY

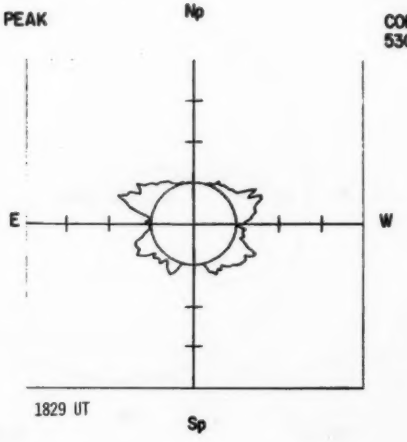


0800 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

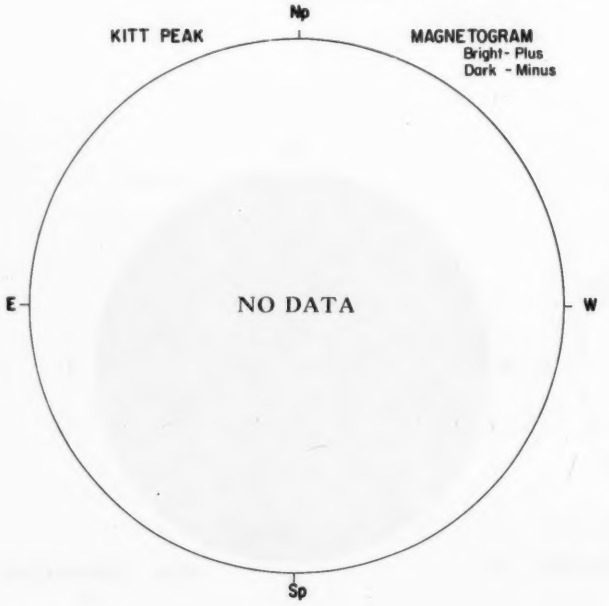
CORONA (1.15 R_o)
5303 Å



1829 UT

KITT PEAK

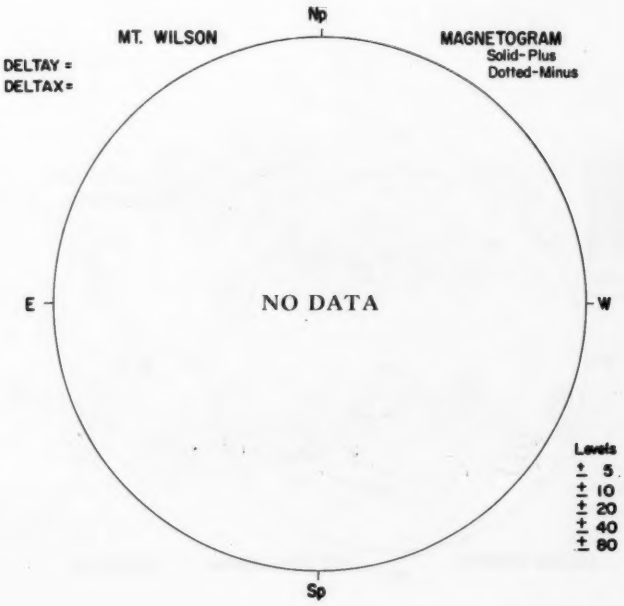
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

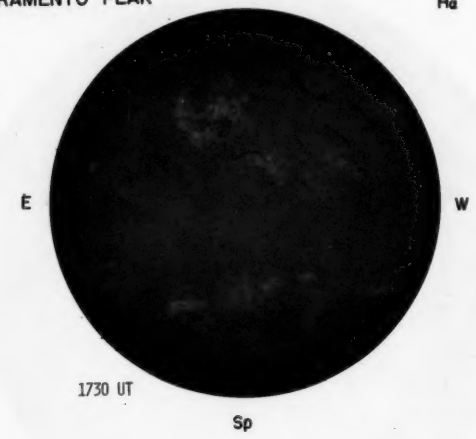
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



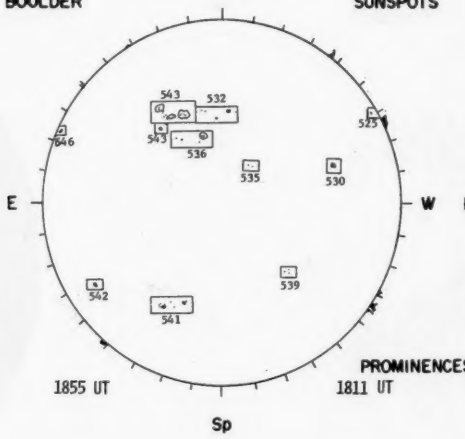
17

SACRAMENTO PEAK Hα



1730 UT

BOULDER SUNSPOTS

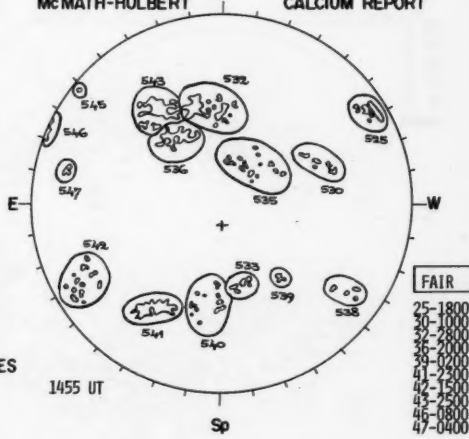


1855 UT

PROMINENCES

1811 UT

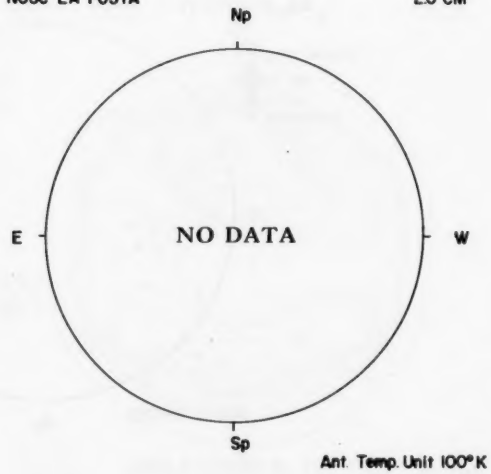
McMATH-HULBERT CALCIUM REPORT



1455 UT

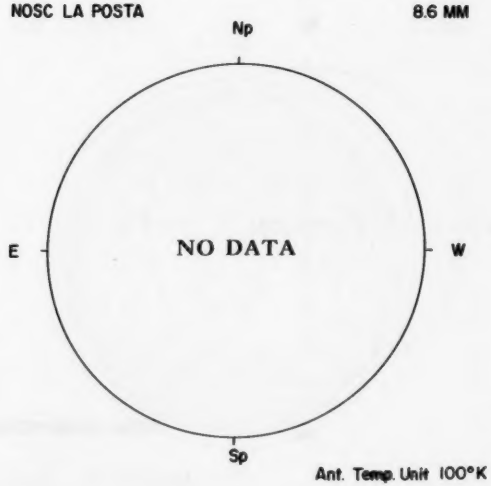
FAIR	D
25-1800	3.0
30-1000	3.0
32-2800	3.0
36-2000	3.0
39-0200	2.5
41-2300	3.5
42-1500	2.5
43-2500	3.0
46-0800	3.0
47-0400	2.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100°K

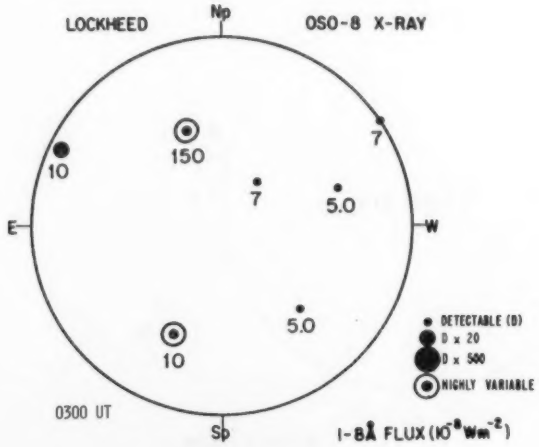
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100°K

SEPTEMBER 18, 1978 (P = 24.52, B_0 = 7.15, L_0 = 27.13)

LOCKHEED OSO-8 X-RAY

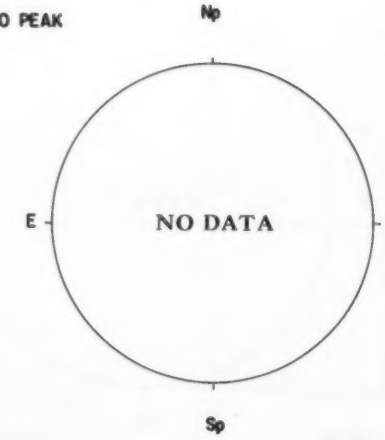


0300 UT

1-8Å FLUX (10^{-8} Wm^{-2})

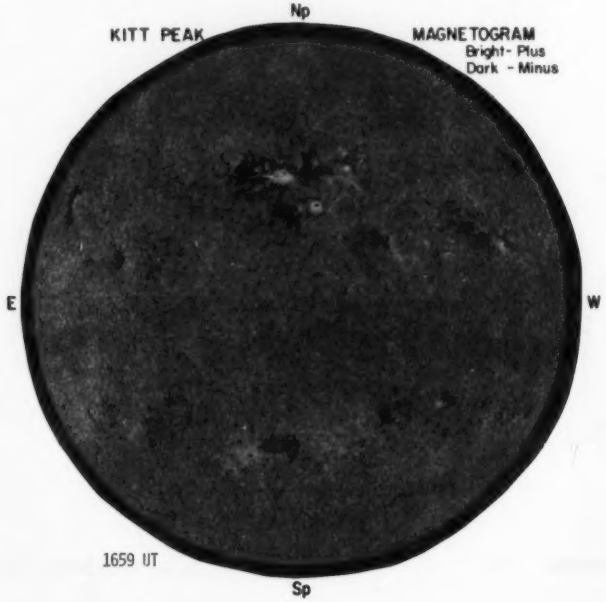
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

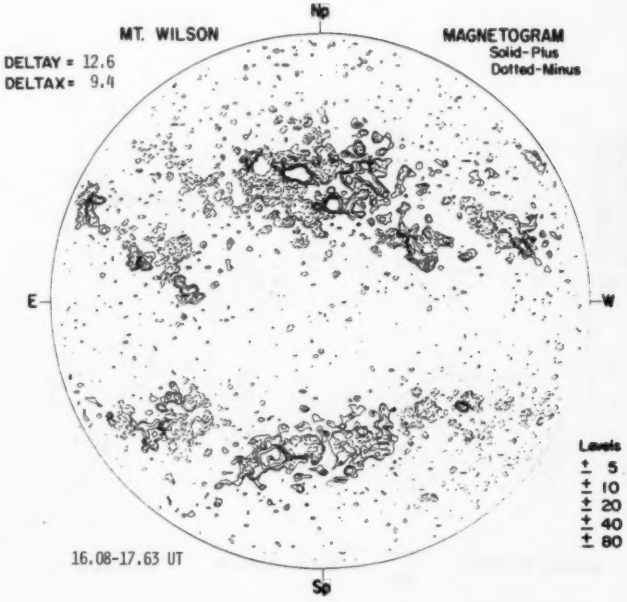


1659 UT

MT. WILSON

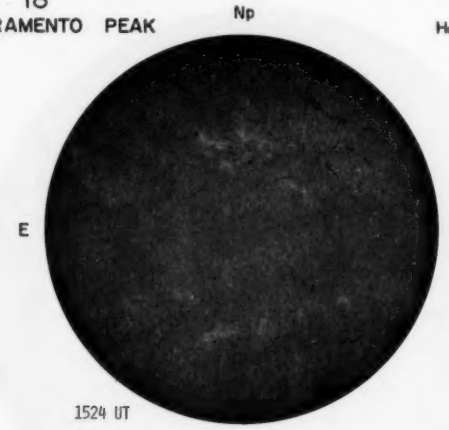
MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.4



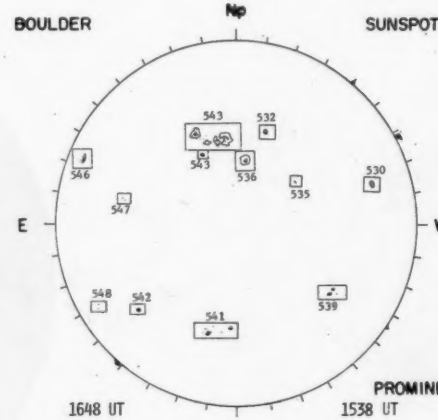
16.08-17.63 UT

SACRAMENTO PEAK



1524 UT

Hα BOULDER

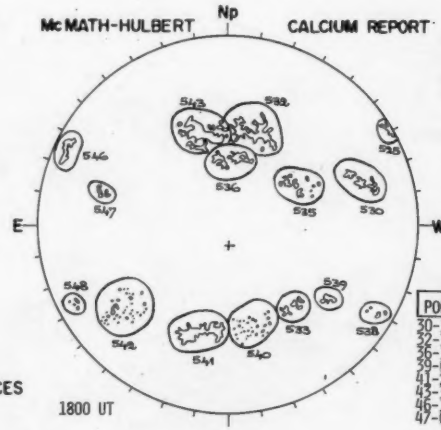


1648 UT

SUNSPOTS

1538 UT

McMATH-HULBERT



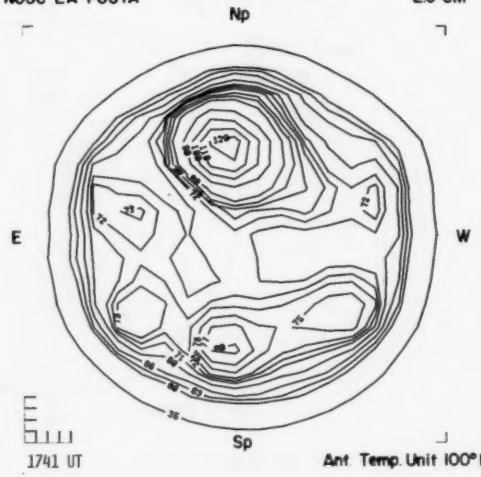
1800 UT

CALCIUM REPORT

POOR	M
30-1200	2.5
32-3000	3.0
36-1700	3.0
39-0400	3.0
41-2600	2.5
43-3000	3.5
46-1900	3.0
47-0300	2.5

PROMINENCES

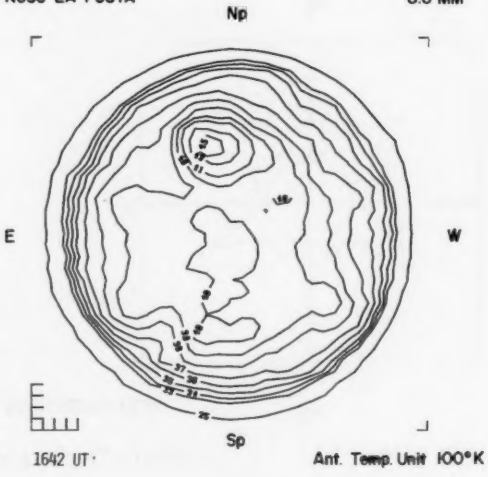
NOSC LA POSTA 2.0 CM



1741 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

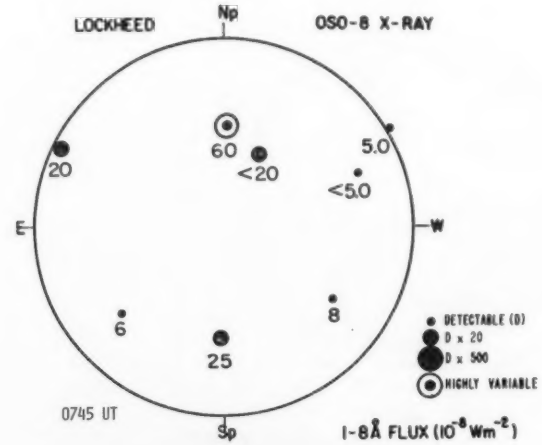


1642 UT

Ant. Temp. Unit 100°K

SEPTEMBER 19, 1978 (P = 24.68, B_o = 7.13, L_o = 13.93)

LOCKHEED OSO-8 X-RAY

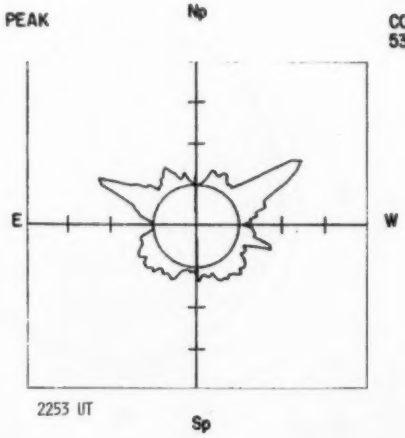


0745 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

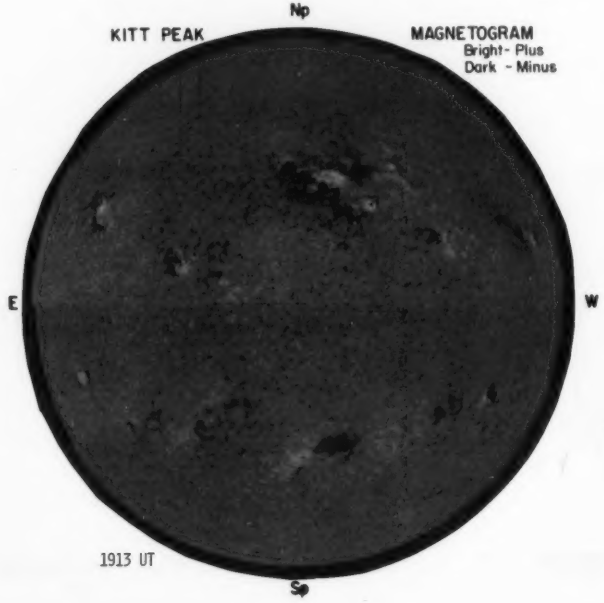
CORONA (1.15 $R_\odot$)
5303 Å



2253 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

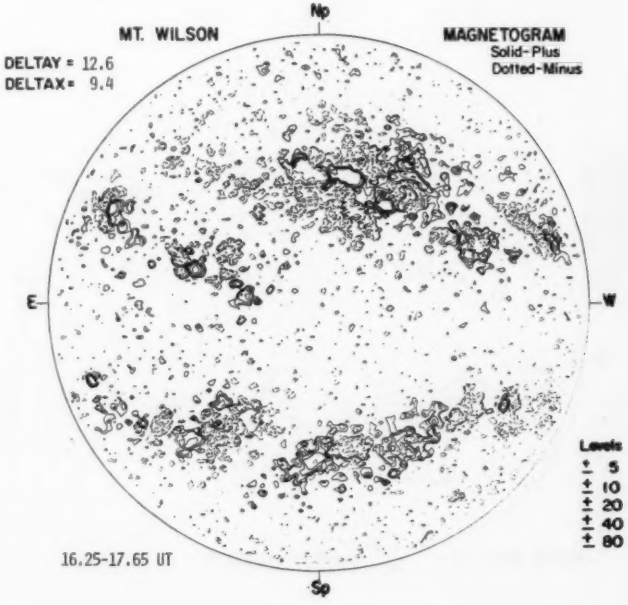


1913 UT

MT. WILSON

MAGNETOGRAM
Solid - Plus
Dotted - Minus

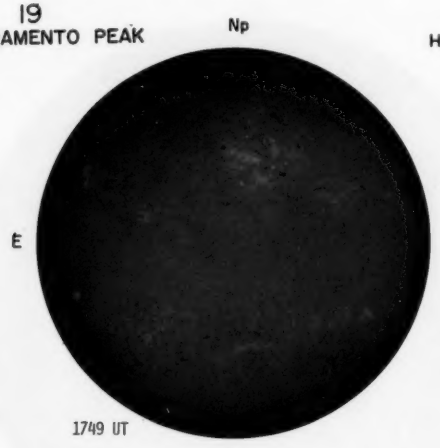
DELTAY = 12.6
DELTAX = 9.4



16.25-17.65 UT

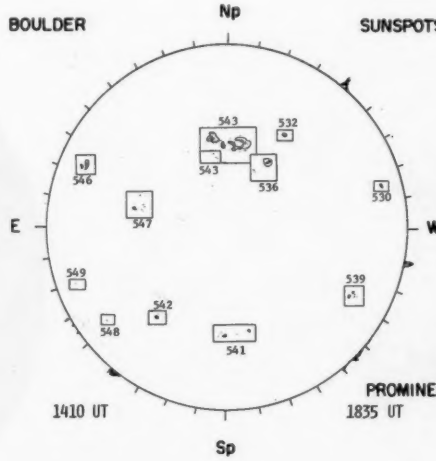
19

SACRAMENTO PEAK Hα



1749 UT

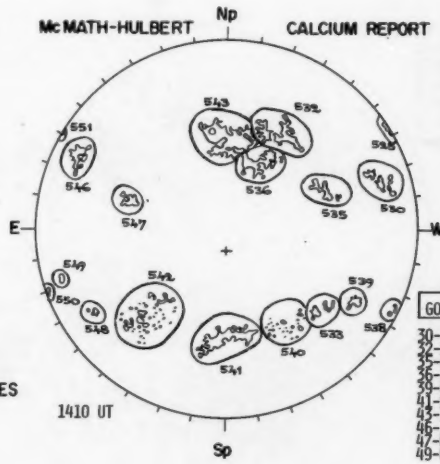
BOULDER SUNSPOTS



1410 UT 1835 UT

PROMINENCES

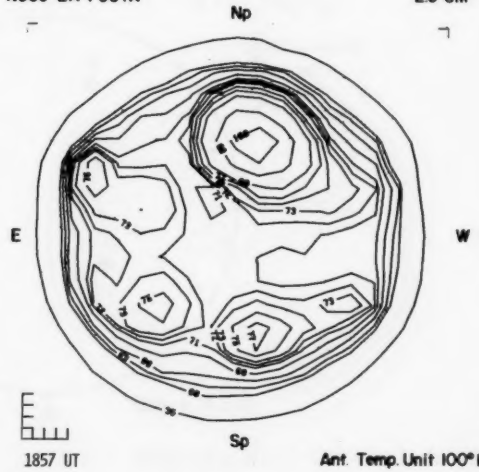
McMATH-HULBERT CALCIUM REPORT



1410 UT

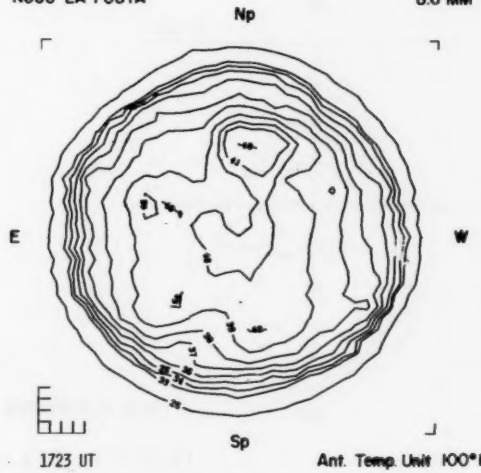
GOOD	M
30-1200	2.5
32-2800	3.5
32-0800	2.5
36-1700	3.5
38-0600	2.5
41-2600	3.5
43-2800	3.5
46-1900	3.5
47-0800	2.5
49-0400	3.5

NOSC LA POSTA 2.0 CM



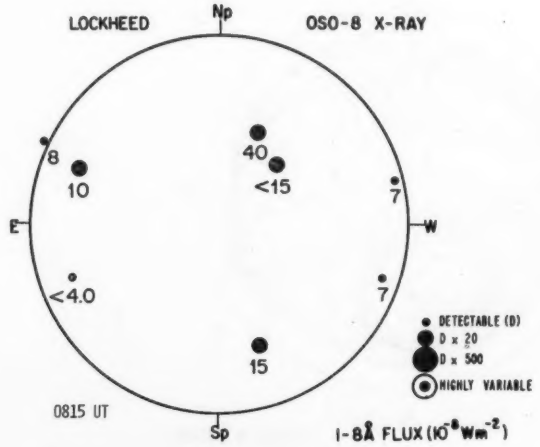
1857 UT Ant. Temp. Unit 100°K

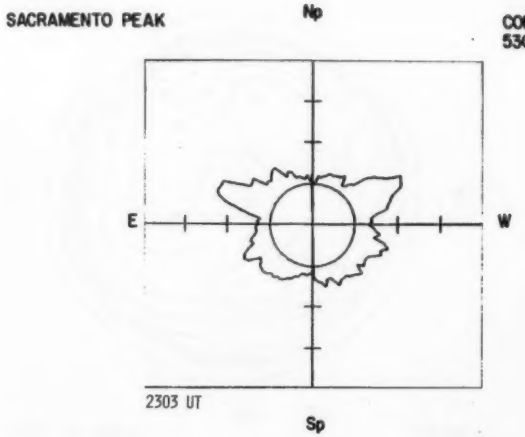
NOSC LA POSTA 8.6 MM

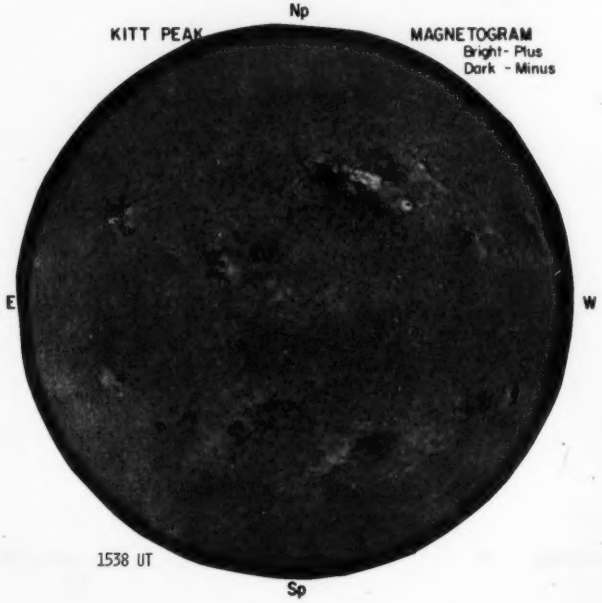


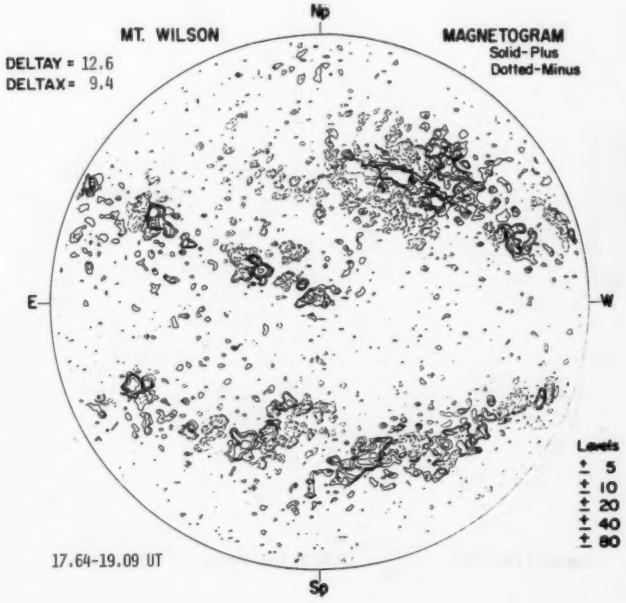
1723 UT Ant. Temp. Unit 100°K

SEPTEMBER 20, 1978 (P = 24.82, B_o = 7.11, L_o = 0.73)



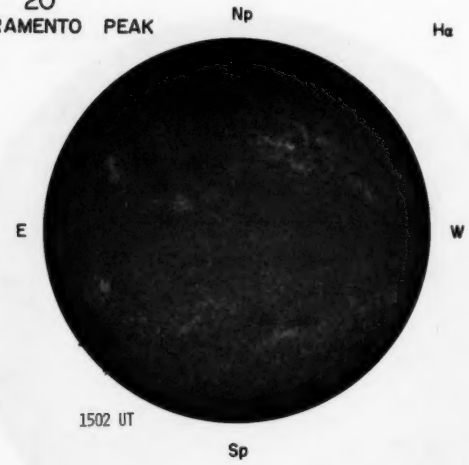






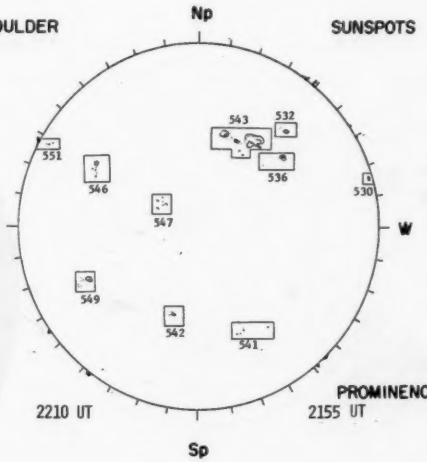
20

SACRAMENTO PEAK



1502 UT

Hα BOULDER



2210 UT

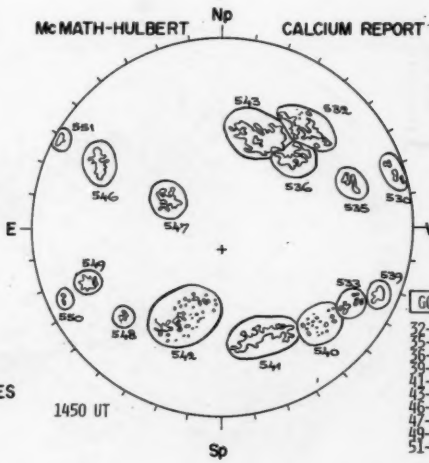
SUNSPOTS

PROMINENCES

2155 UT

McMATH-HULBERT

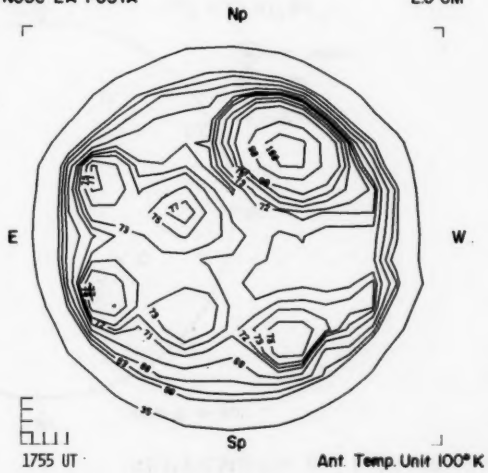
CALCIUM REPORT



1450 UT

GOOD	M
32-2800	3.0
35-0700	3.5
36-1700	3.5
39-0800	3.5
41-2600	3.5
43-4300	3.5
46-1900	3.5
47-0800	3.5
49-1000	3.5
51-0900	3.0

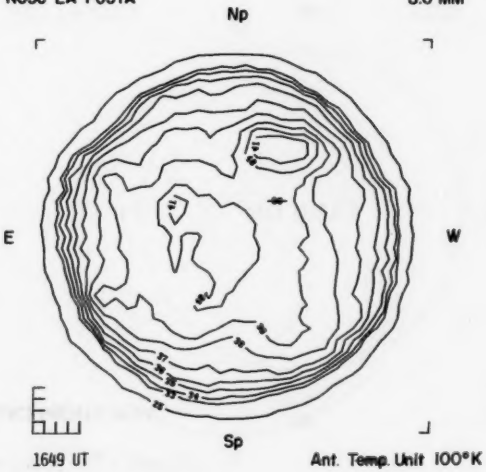
NOSC LA POSTA 2.0 CM



1755 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM

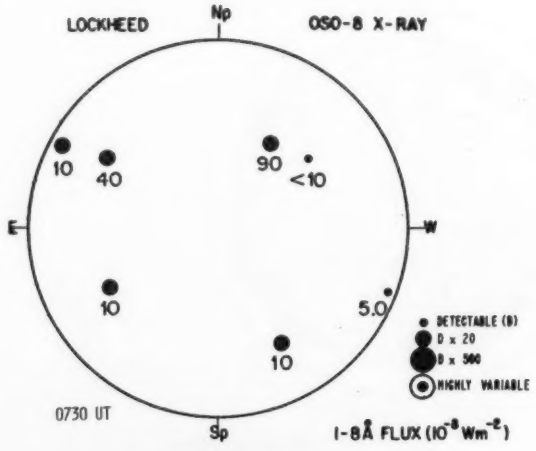


1649 UT

Ant. Temp. Unit 100°K

SEPTEMBER 21, 1978 (P = 24.96, B_o = 7.09, L_o = 347.53)

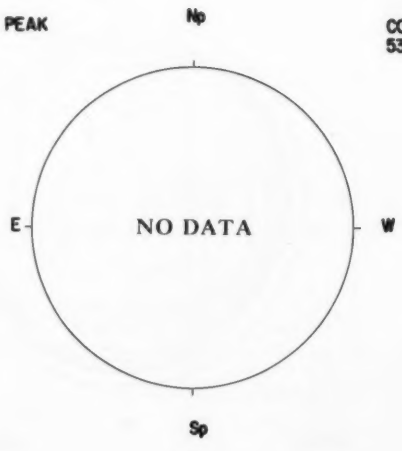
LOCKHEED — OSO-8 X-RAY



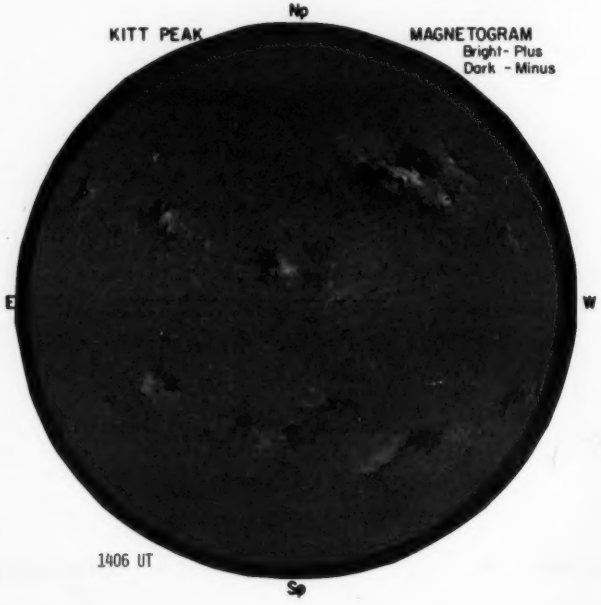
0730 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



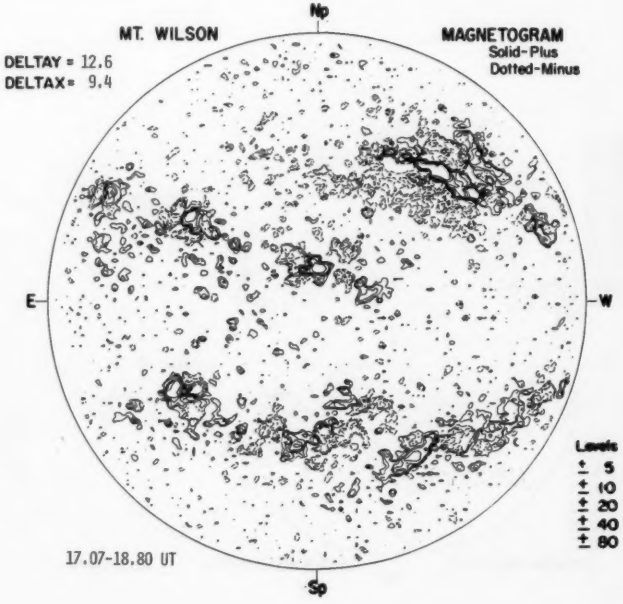
KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus



1406 UT

MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus

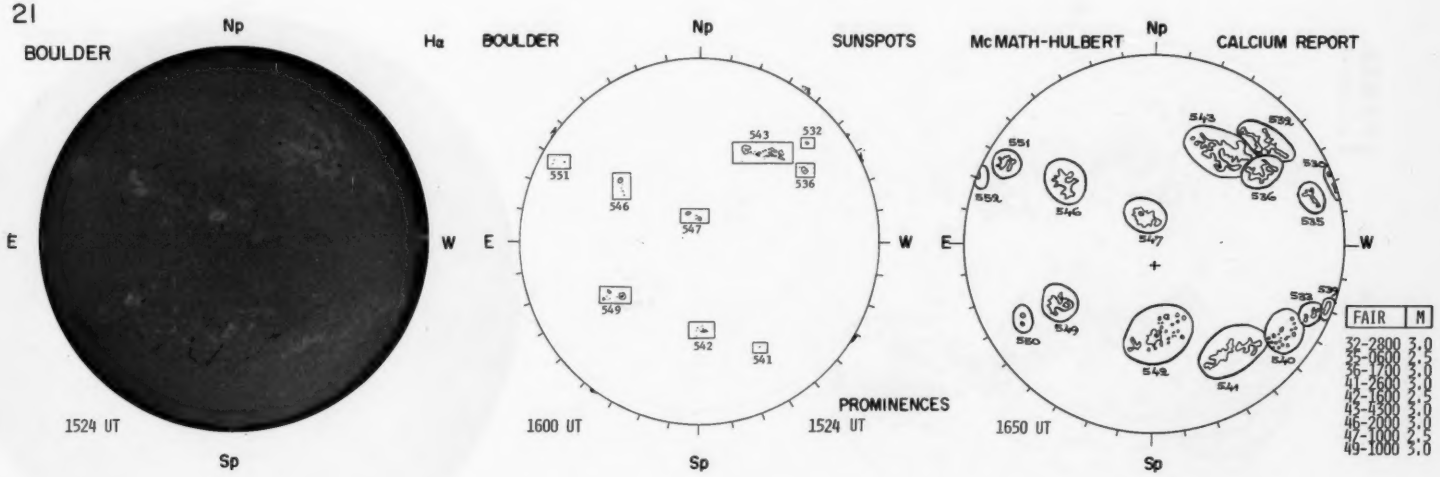
DELTAY = 12.6
DELTAX = 9.4

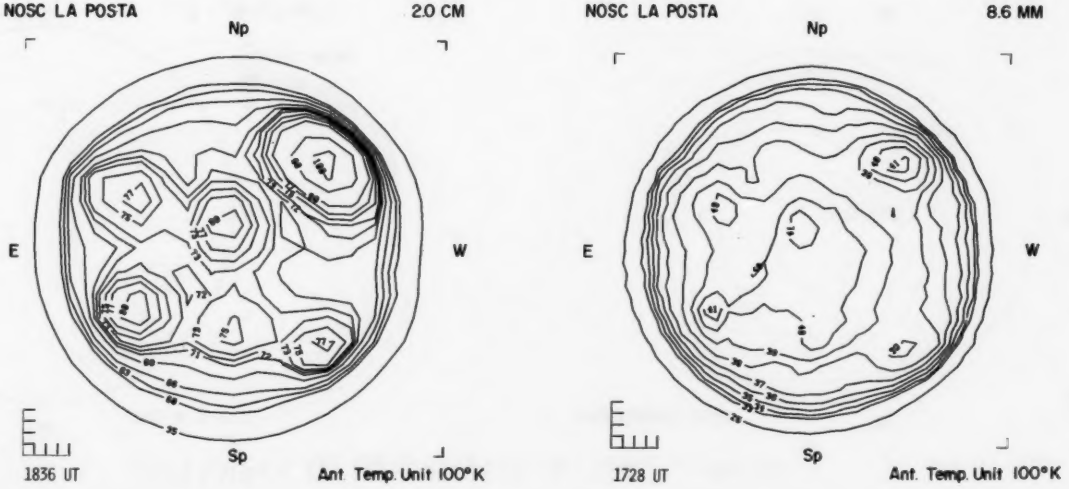


17.07-18.80 UT

Sp

21

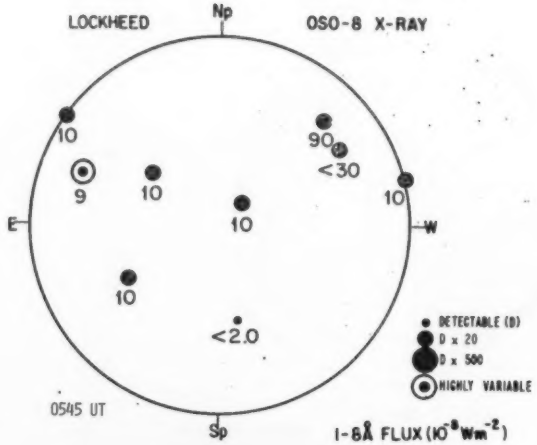




87
Sep 78

SEPTEMBER 22, 1978 (P = 25.09, B_o = 7.06, L_o = 334.33)

LOCKHEED OSO-8 X-RAY

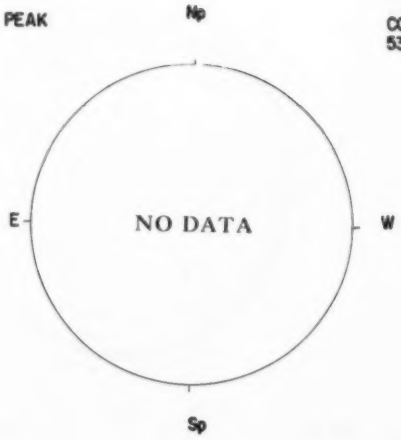


0545 UT

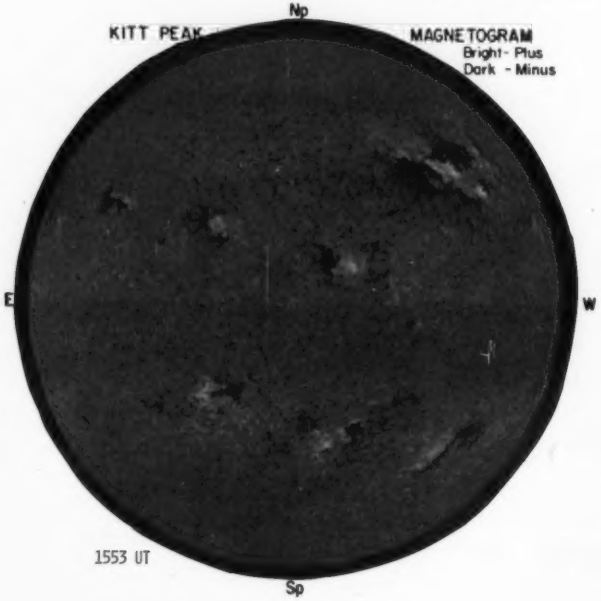
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



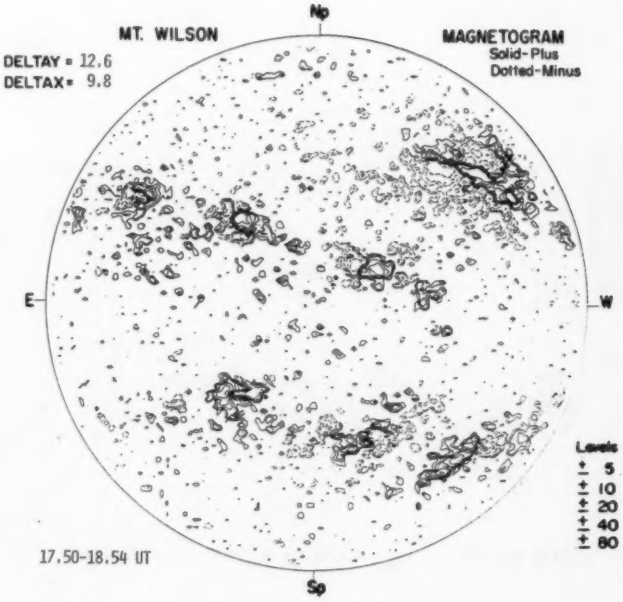
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1553 UT

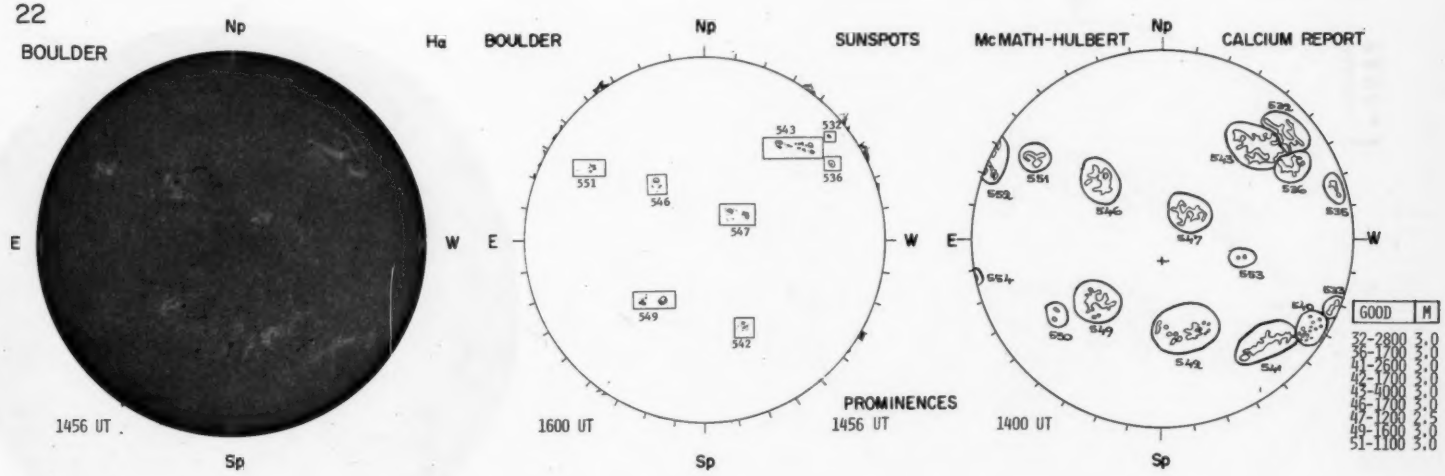
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

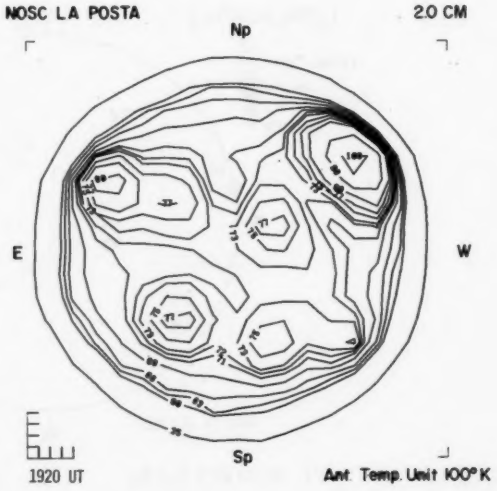
DELTAY = 12.6
DELTAX = 9.8

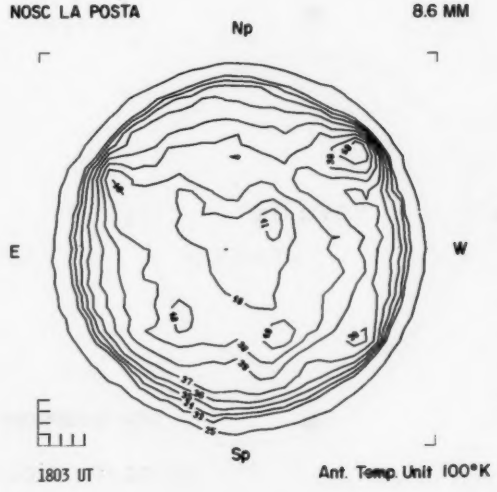


17.50-18.54 UT

22

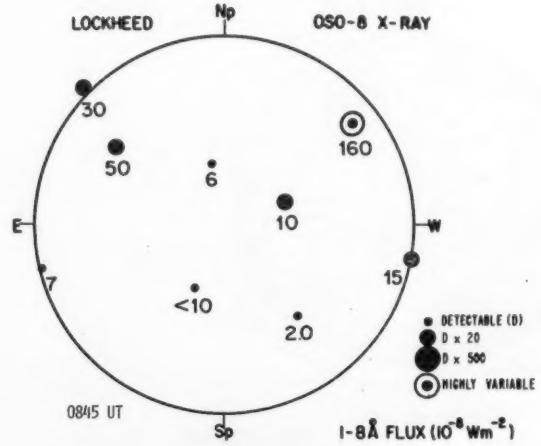

BOULDER
Np
Sp
E
W
1456 UT
Hα
BOULDER
1600 UT
SUNSPOTS
PROMINENCES
1456 UT
McMATH-HULBERT
1400 UT
CALCIUM REPORT
GOOD M
32-2800 3.0
36-1700 3.0
41-2600 3.0
42-1700 3.0
43-4000 3.0
46-1700 3.0
47-1200 2.5
49-1600 3.0
51-1100 3.0


NOSC LA POSTA
2.0 CM
Np
Sp
E
W
1920 UT
Ant. Temp. Unit 100°K

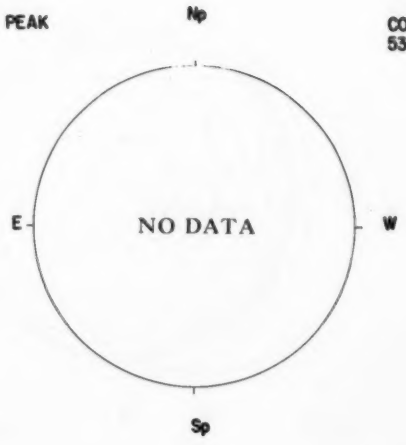

NOSC LA POSTA
8.6 MM
Np
Sp
E
W
1803 UT
Ant. Temp. Unit 100°K

SEPTEMBER 23, 1978 (P = 25.22, B_o = 7.03, L_o = 321.13)

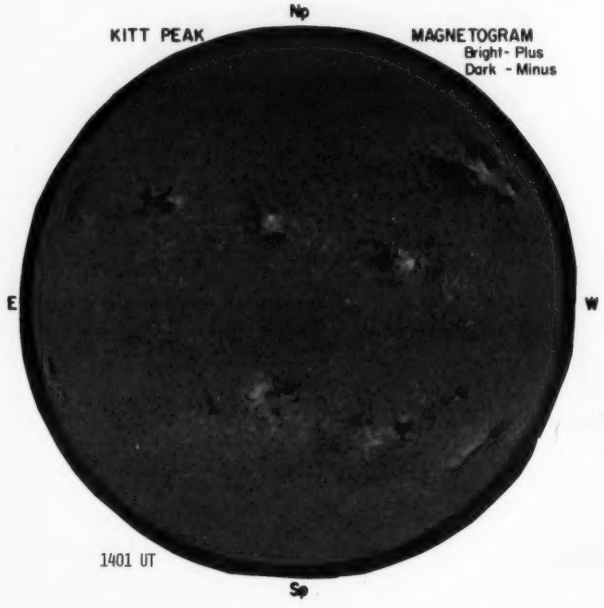
LOCKHEED — OSO-8 X-RAY



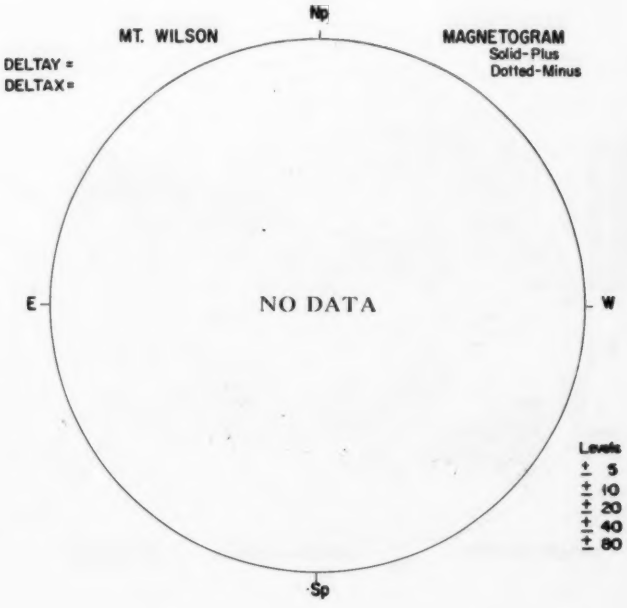
SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus

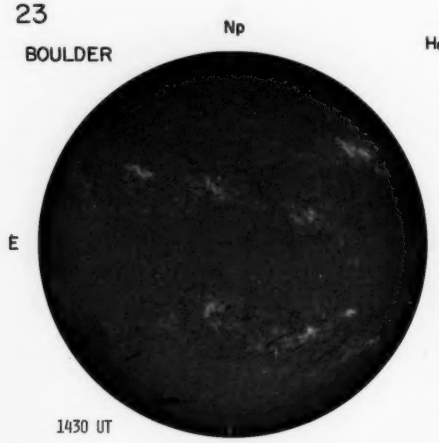


MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =

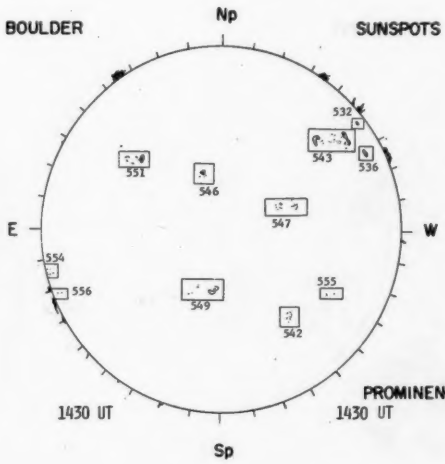


23

BOULDER



Hα BOULDER

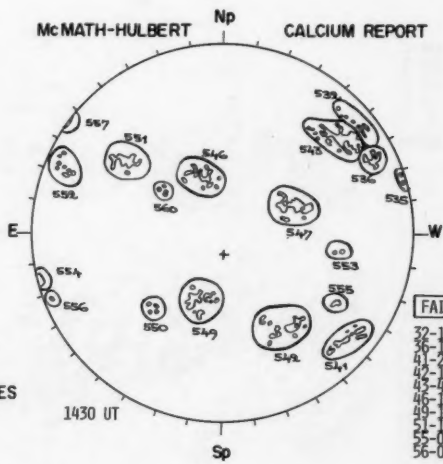


SUNSPOTS

PROMINENCES

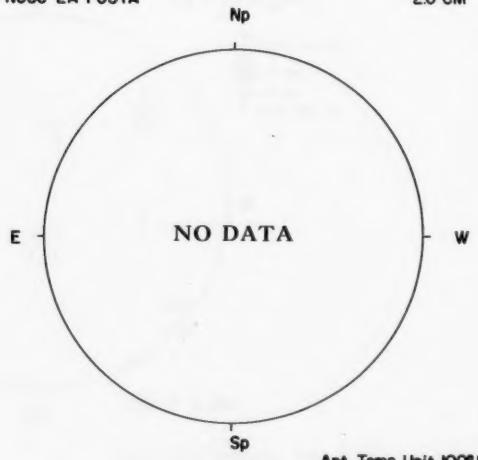
1430 UT

McMATH-HULBERT CALCIUM REPORT



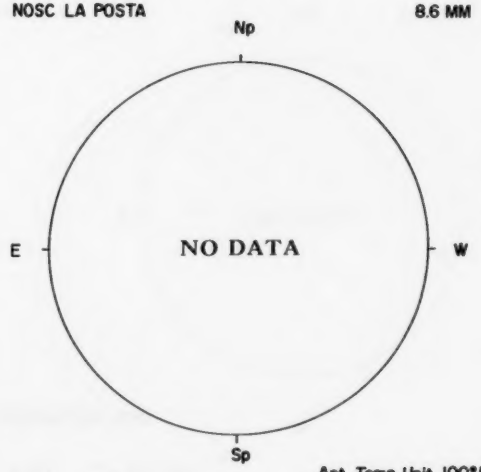
FAIR	S
32-1800	2.5
36-1500	2.5
41-2300	2.5
42-1600	3.0
43-4000	3.5
46-1500	3.5
49-1500	3.0
51-1300	3.0
52-0400	2.5
56-0200	2.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100°K

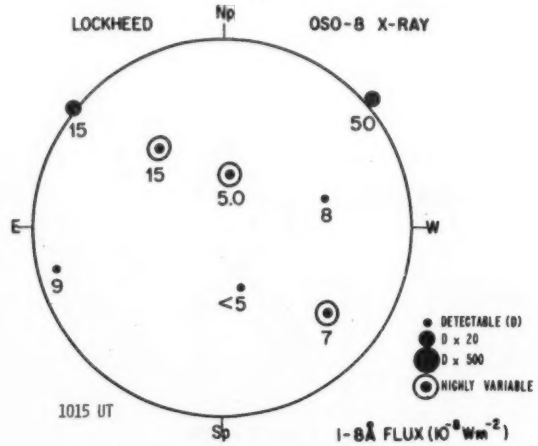
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100°K

SEPTEMBER 24, 1978 (P = 25.34, B_o = 7.00, L_o = 307.93)

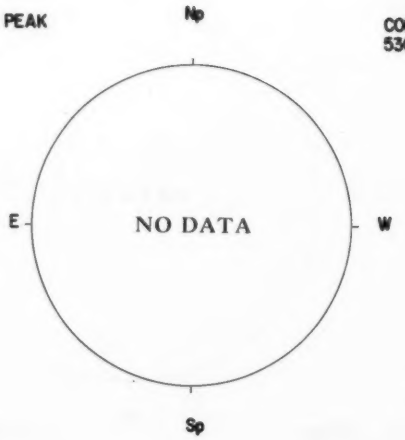
LOCKHEED — OSO-8 X-RAY



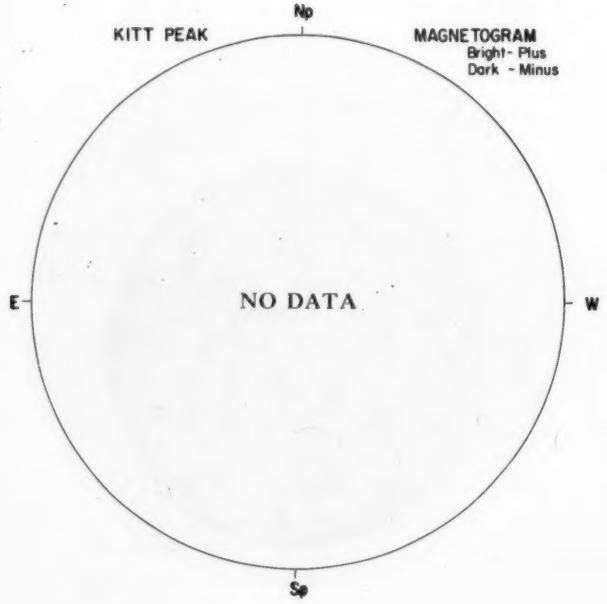
1015 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å

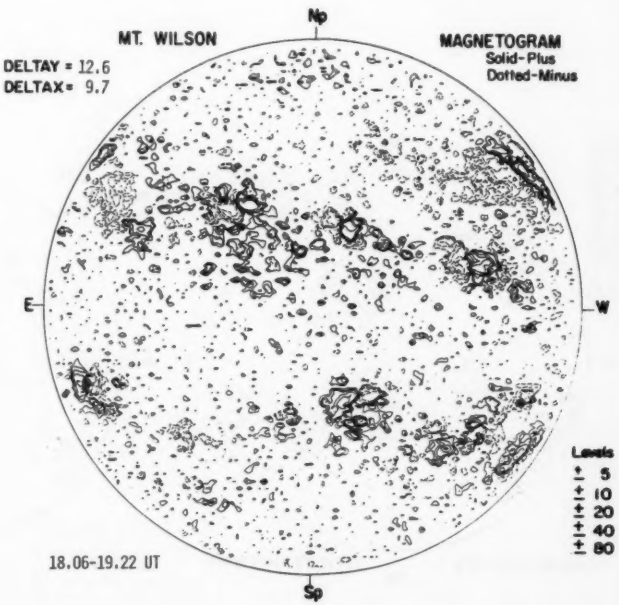


KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus



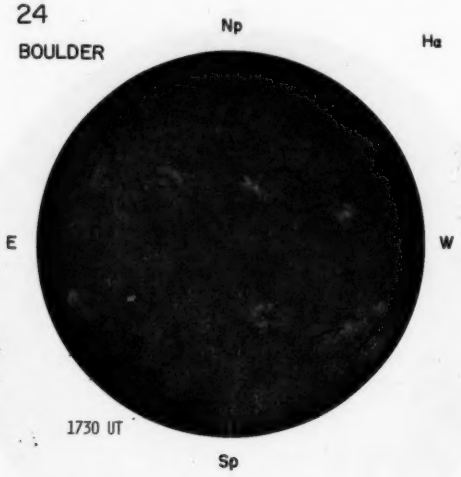
MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus

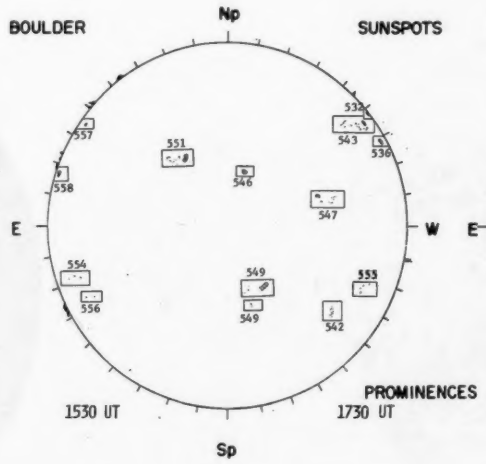
DELTAY = 12.6
DELTAX = 9.7

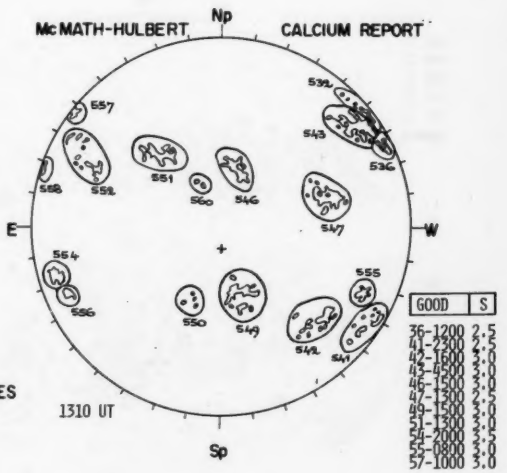


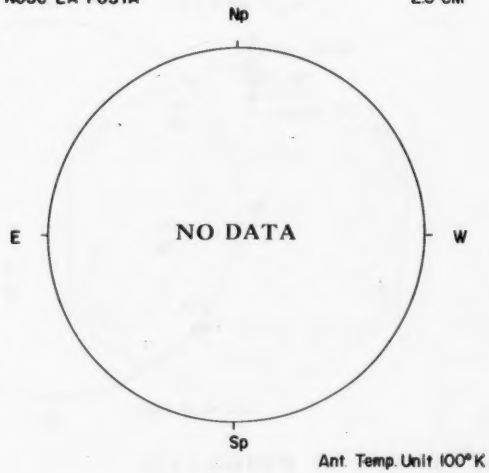
18.06-19.22 UT

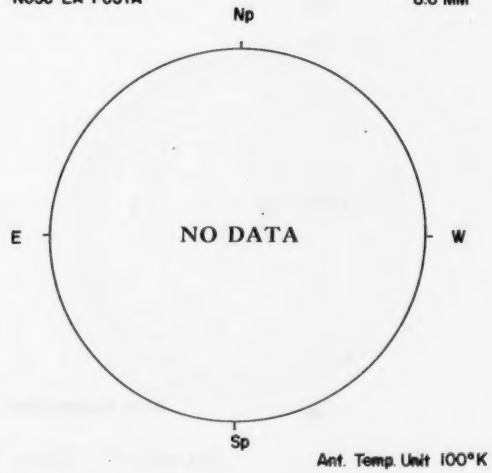
24


BOULDER
Np
E
W
Sp
1730 UT


Hα BOULDER
Np
E
W
Sp
1530 UT
1730 UT
PROMINENCES

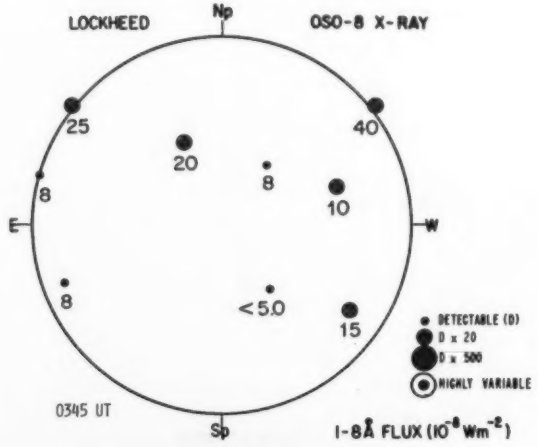

SUNSPOTS
McMATH-HULBERT
Np
E
W
Sp
1310 UT
CALCIUM REPORT
GOOD S
36-1200 2.5
41-2300 2.5
42-1600 3.0
43-0500 3.0
46-1300 3.0
47-1300 3.0
49-1500 3.0
51-1300 3.0
54-2000 3.0
55-0800 3.0
57-1000 3.0


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
NO DATA
Ant. Temp. Unit 100°K


NOSC LA POSTA
8.6 MM
Np
E
W
Sp
NO DATA
Ant. Temp. Unit 100°K

SEPTEMBER 25, 1978 (P = 25.45, B_o = 6.96, L_o = 294.74)

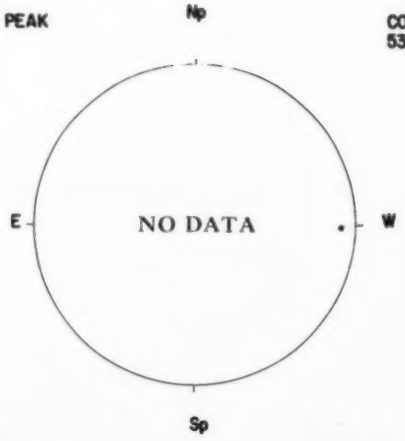
LOCKHEED OSO-8 X-RAY



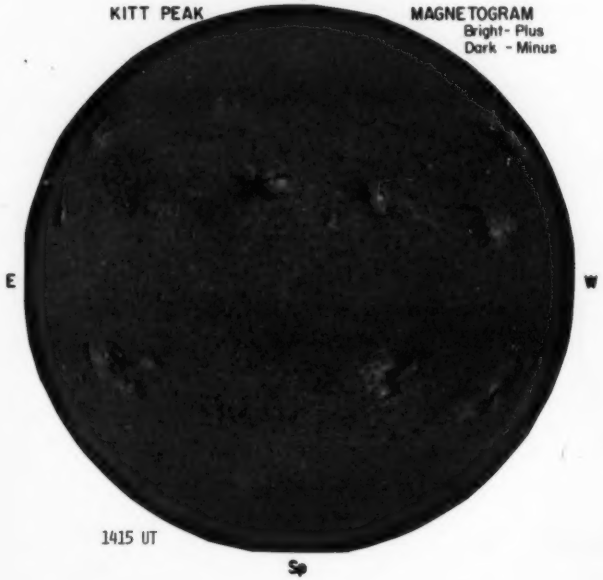
0345 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

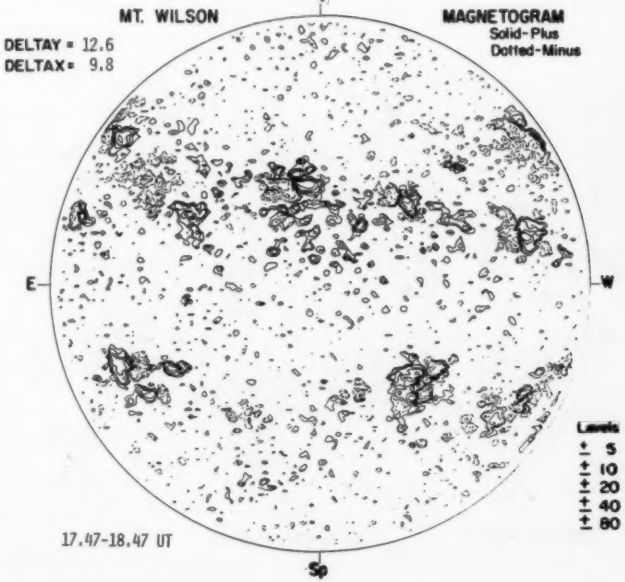


KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



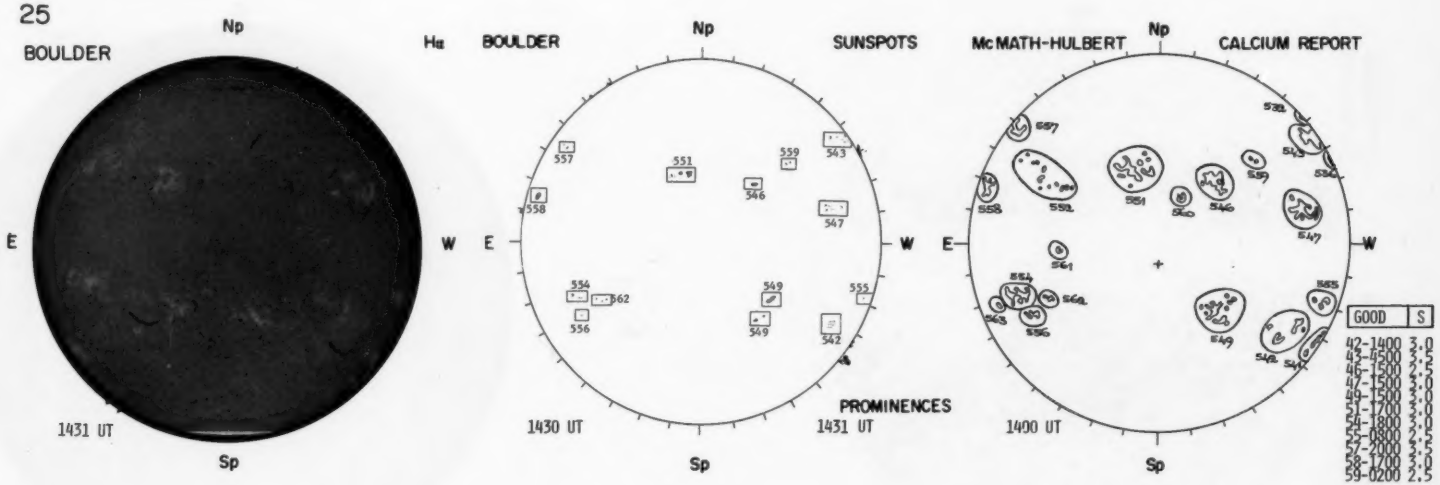
1415 UT

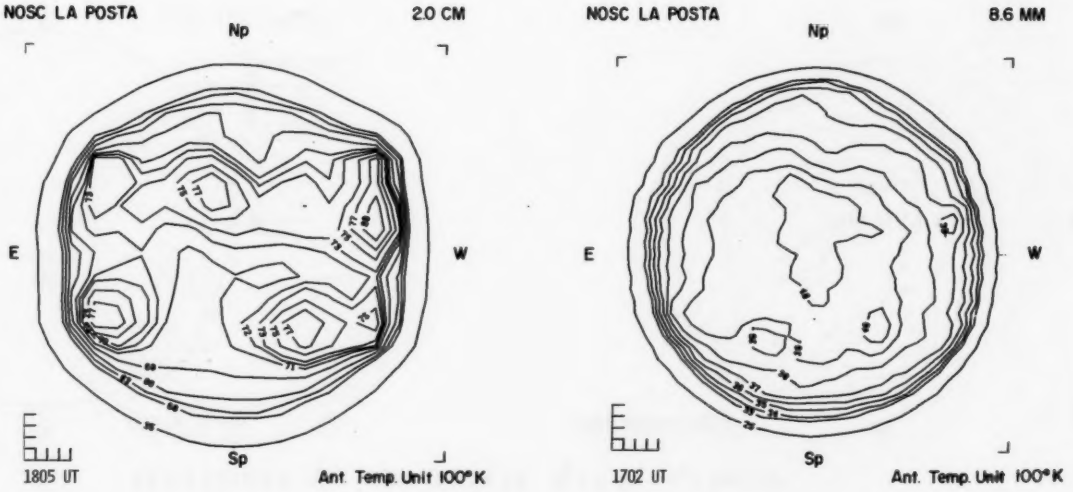
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.8



17.47-18.47 UT

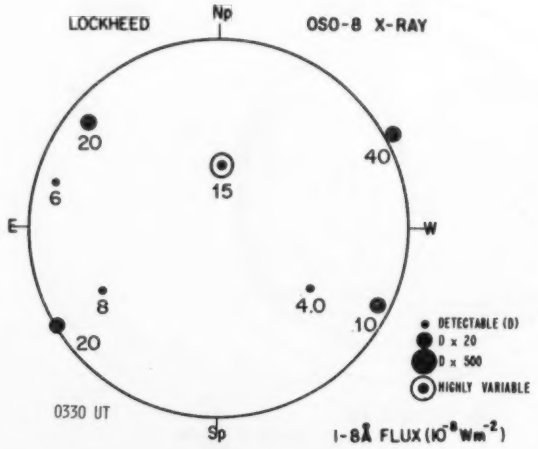
25


BOULDER
Np
E
W
Sp
1431 UT
Hα BOULDER
Np
E
W
Sp
1430 UT
SUNSPOTS
PROMINENCES
1431 UT
McMATH-HULBERT
Np
E
W
Sp
1400 UT
CALCIUM REPORT
GOOD | S
42-1400 3.0
43-0500 2.5
46-1500 2.5
47-1500 3.0
49-1500 3.0
51-1700 3.0
54-1800 3.0
55-0800 2.5
57-2000 2.5
58-1700 3.0
59-0200 2.5


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
1805 UT
Ant. Temp. Unit 100°K
NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1702 UT
Ant. Temp. Unit 100°K

SEPTEMBER 26, 1978 (P = 25.56, B_0 = 6.93, L_0 = 281.54)

LOCKHEED OSO-8 X-RAY

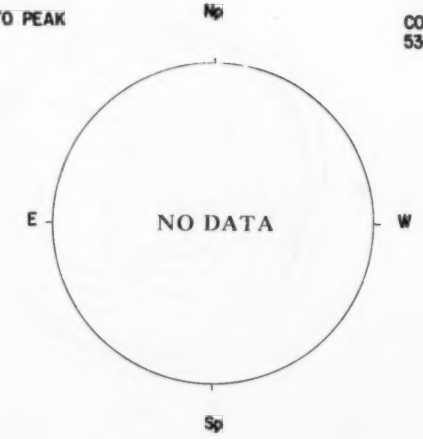


0330 UT

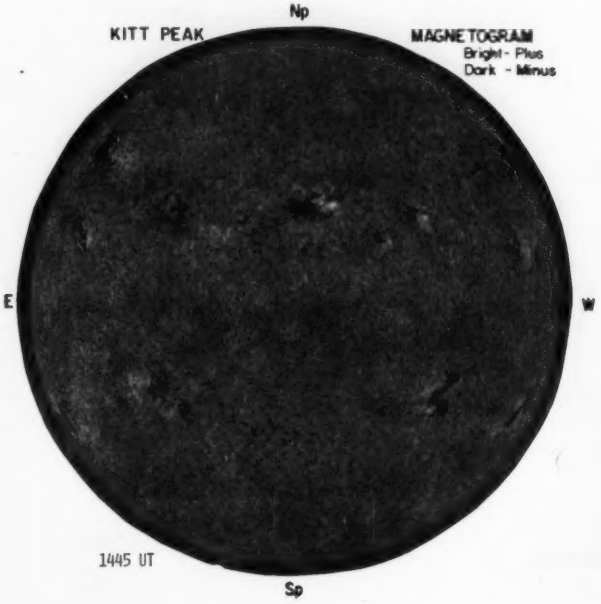
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



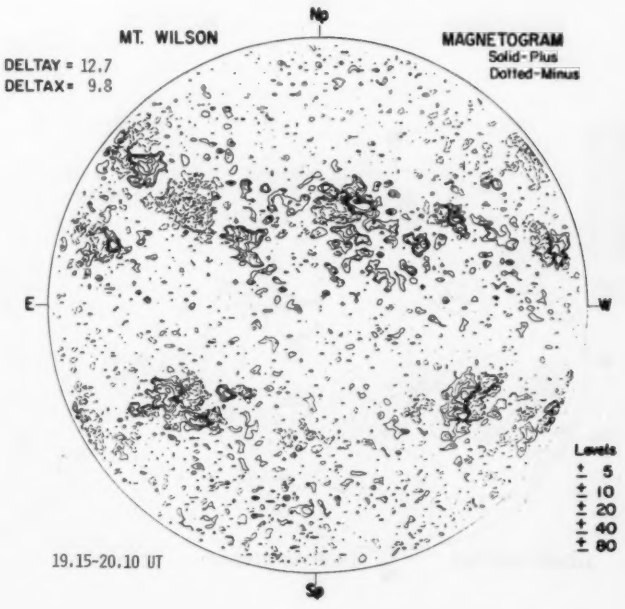
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1445 UT

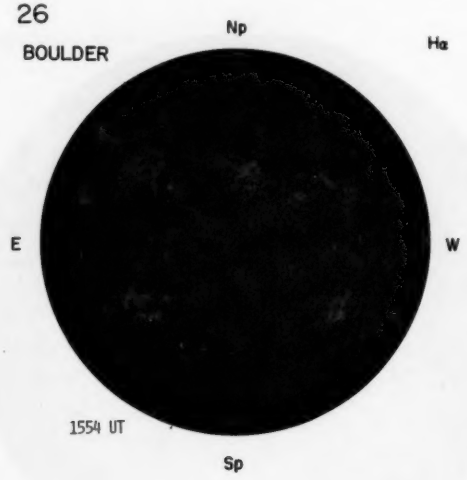
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

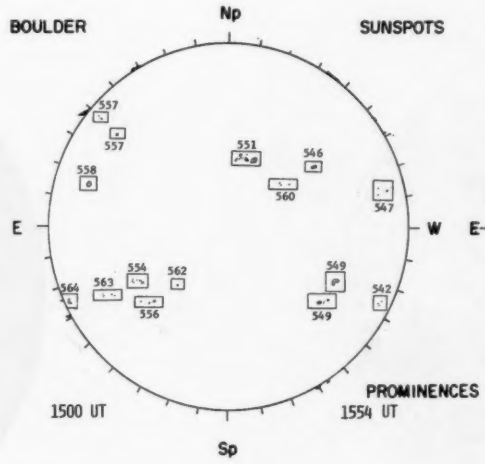
DELTAY = 12.7
DELTAX = 9.8

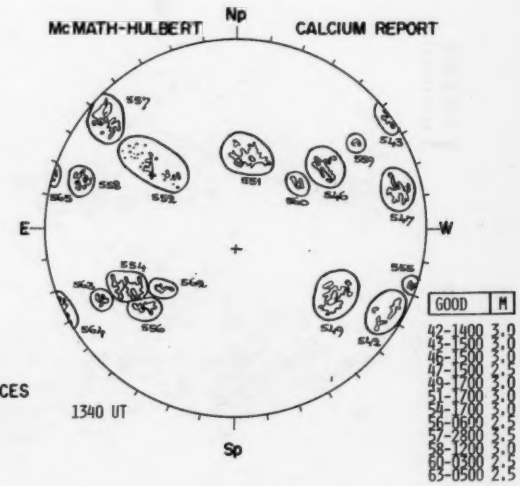


19.15-20.10 UT

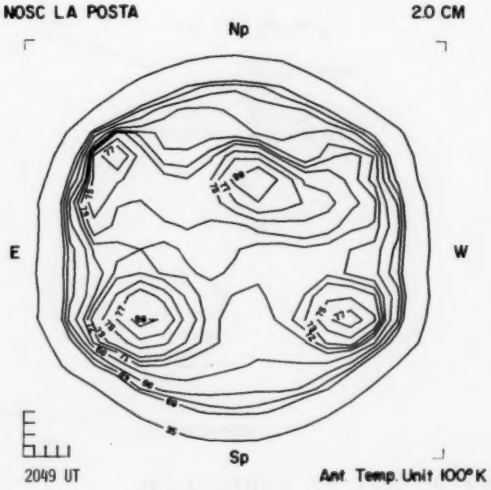
26

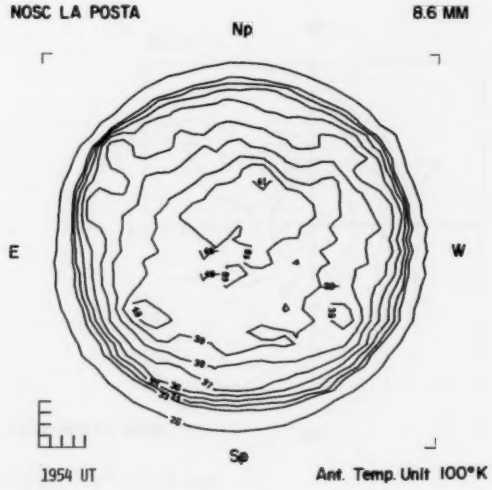

BOULDER
Np
E
W
Sp
1554 UT


Hα
BOULDER
Np
E
W
Sp
1500 UT


SUNSPOTS
Np
E
W
Sp
1554 UT
PROMINENCES
1340 UT

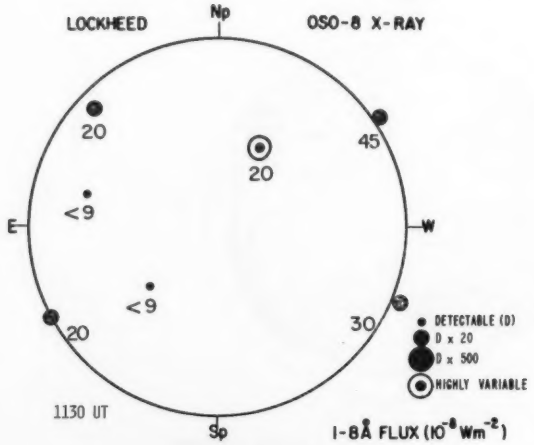
McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
GOOD
M
42-1400 3.0
43-1500 3.0
46-1500 3.0
47-1500 2.5
49-1700 3.0
51-1700 3.0
54-1700 3.0
56-0600 2.5
57-2300 2.5
58-1200 3.0
60-0500 2.5
63-0500 2.5


NOSC LA POSTA
2.0 CM
Np
E
W
Sp
2049 UT
Ant. Temp. Unit 100°K


NOSC LA POSTA
8.6 MM
Np
E
W
Sp
1954 UT
Ant. Temp. Unit 100°K

SEPTEMBER 27, 1978 (P = 25.66, B_o = 6.89, L_o = 268.34)

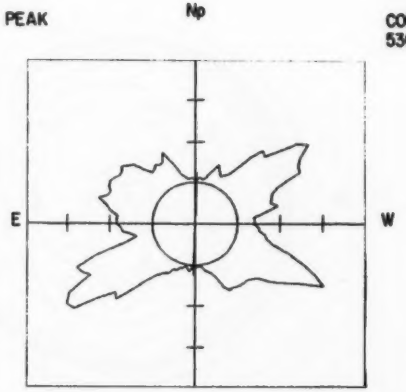
LOCKHEED OSO-8 X-RAY



1130 UT

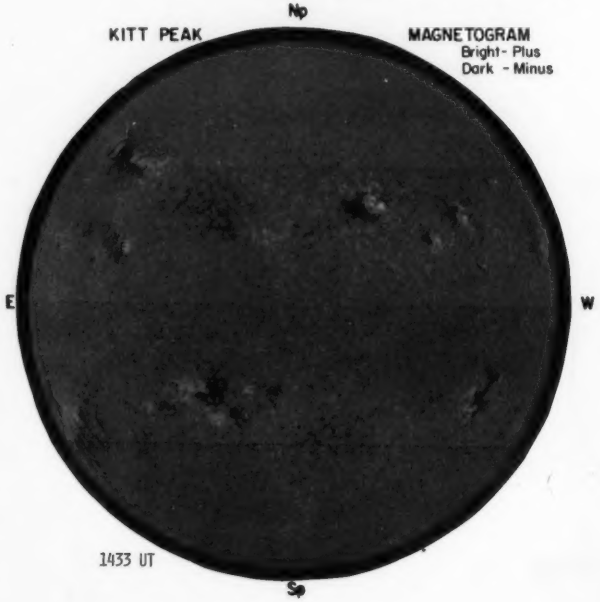
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



1552 UT

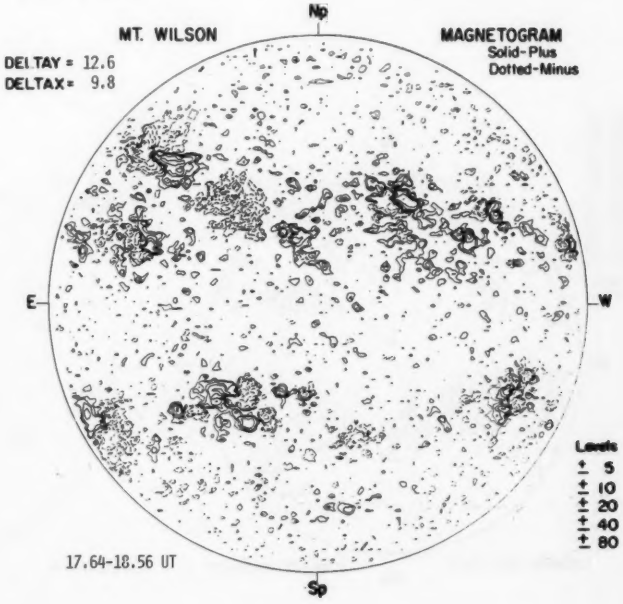
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1433 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

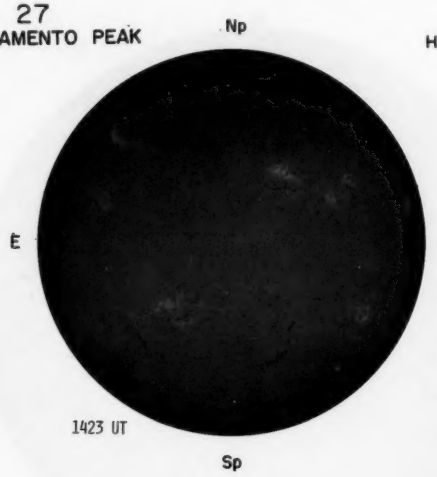
DELTAY = 12.6
DELTAX = 9.8



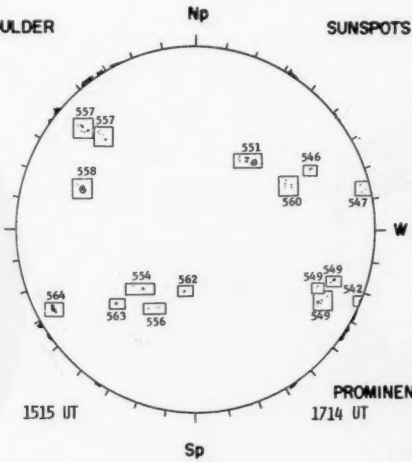
17.64-18.56 UT

27

SACRAMENTO PEAK



Hα BOULDER



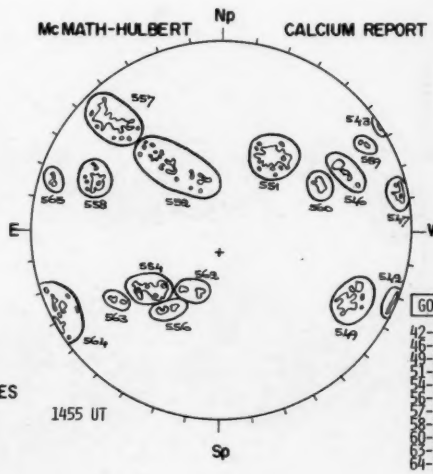
SUNSPOTS

PROMINENCES

1714 UT

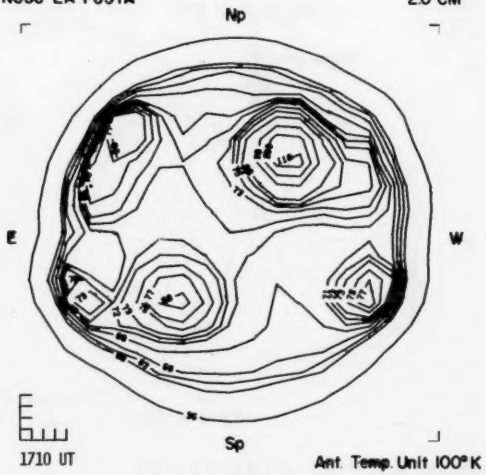
McMATH-HULBERT

CALCIUM REPORT



GOOD	M
42-1200	2.5
46-1300	3.0
49-2100	3.0
51-2100	4.0
54-1800	3.0
56-0600	2.5
57-3500	3.5
58-1200	2.5
60-0600	3.0
63-0300	3.0
64-1500	3.0

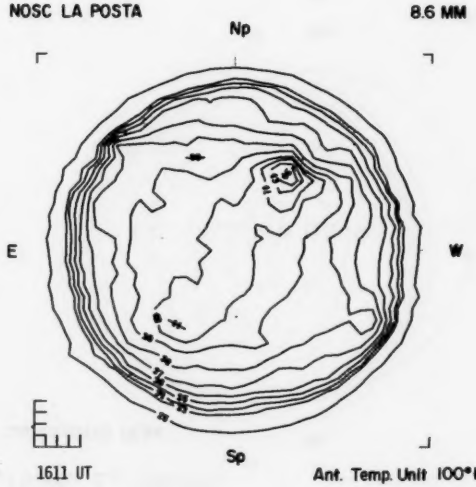
NOSC LA POSTA 2.0 CM



1710 UT

Ant. Temp. Unit 100°K

NOSC LA POSTA 8.6 MM



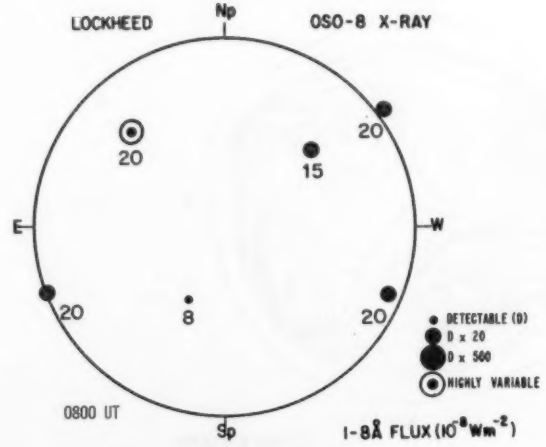
1611 UT

Ant. Temp. Unit 100°K

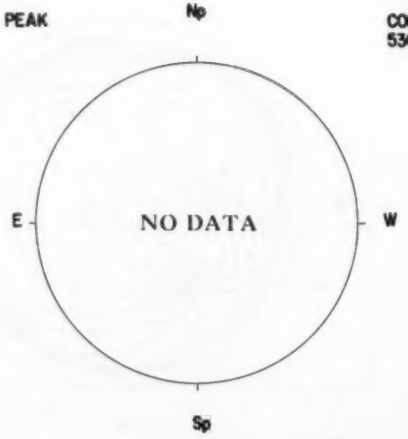
99
Sep 78

SEPTEMBER 28, 1978 (P = 25.75, B_o = 6.85, L_o = 255.14)

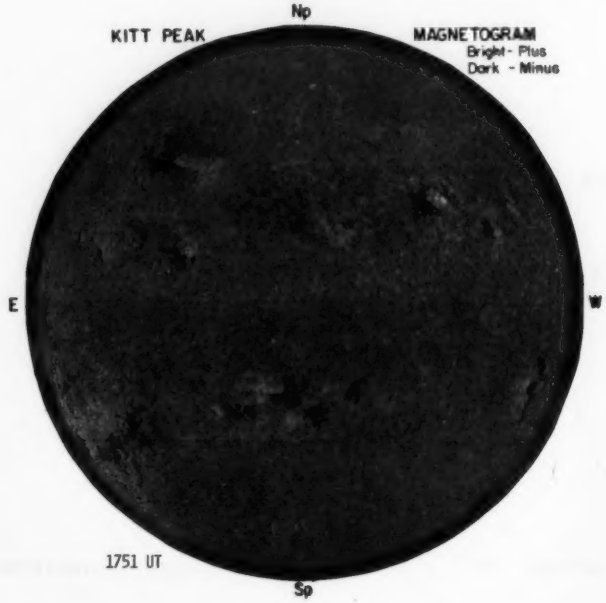
LOCKHEED — OSO-8 X-RAY



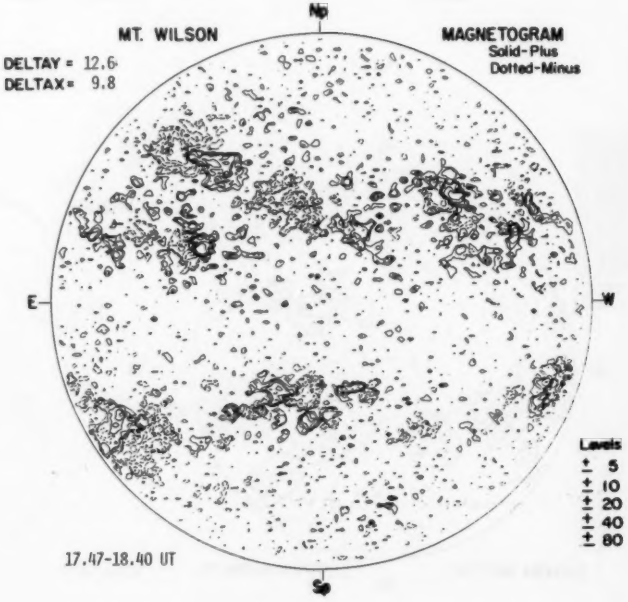
SACRAMENTO PEAK — CORONA (1.15 R_o) 5303 Å



KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.8



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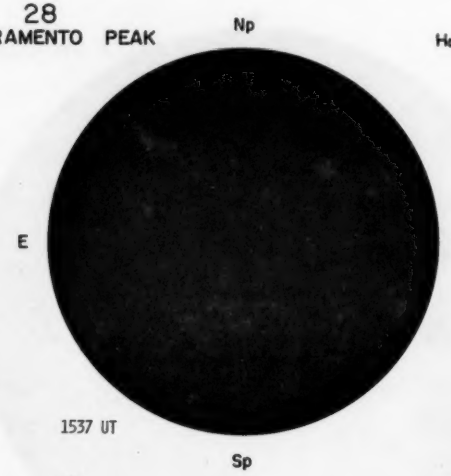
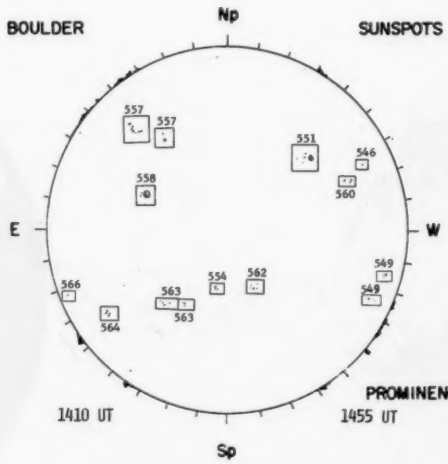
SACRAMENTO PEAK



Hα BOULDER

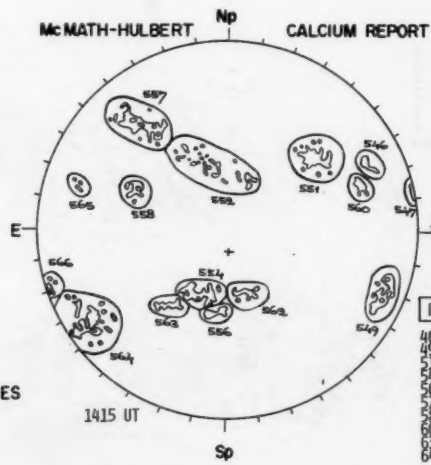


SUNSPOTS

PROMINENCES

1455 UT

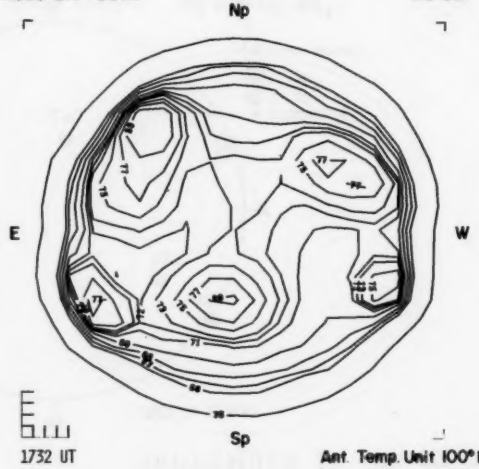
McMATH-HULBERT



CALCIUM REPORT

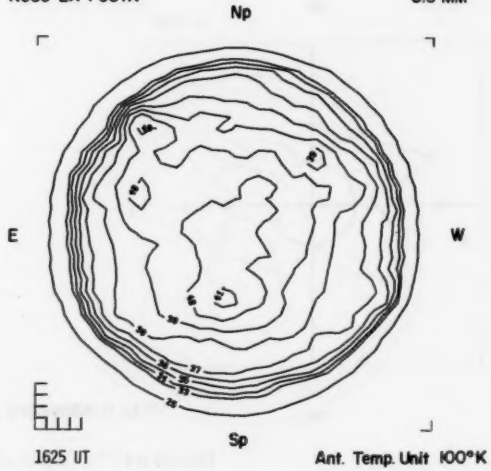
FAIR	S
46-1000	2.5
49-2800	3.0
51-2100	3.0
54-2000	2.5
54-0800	2.5
56-0800	2.5
57-3500	2.5
58-1100	2.5
60-0800	2.5
62-0700	2.5
64-2900	3.0

NOSC LA POSTA 2.0 CM



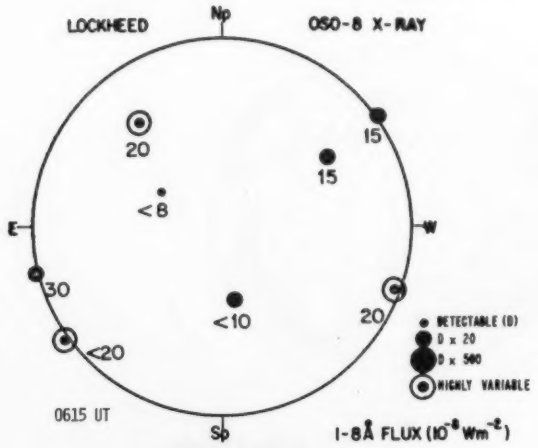
Ant. Temp. Unit 100°K

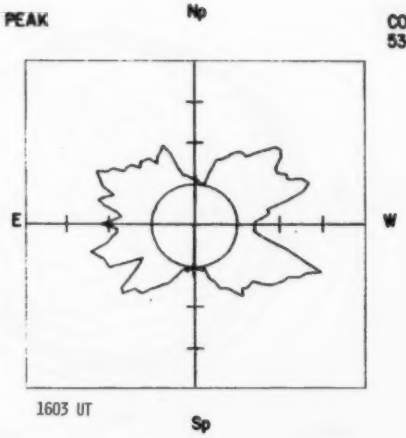
NOSC LA POSTA 8.6 MM

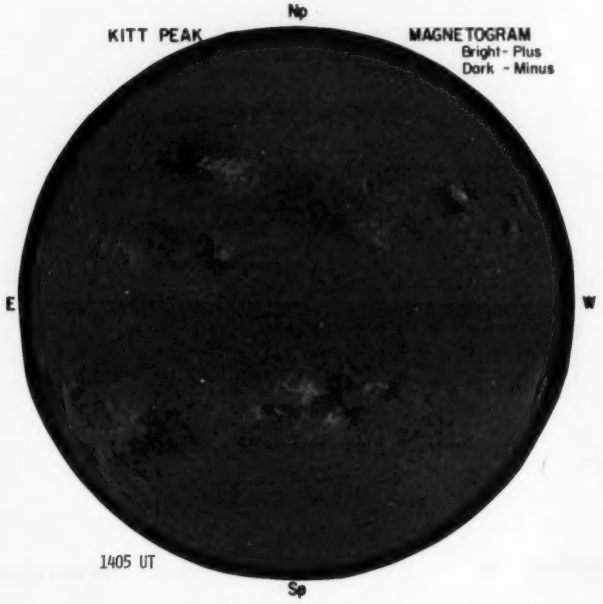


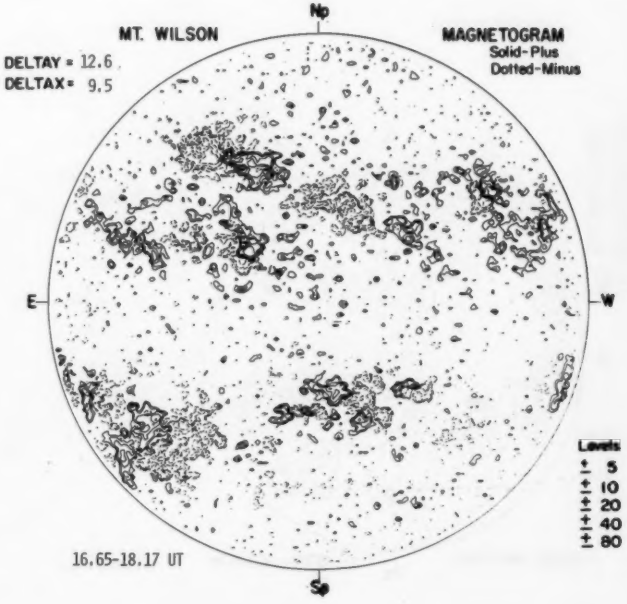
Ant. Temp. Unit 100°K

SEPTEMBER 29, 1978 (P = 25.84, B_o = 6.81, L_o = 241.95)









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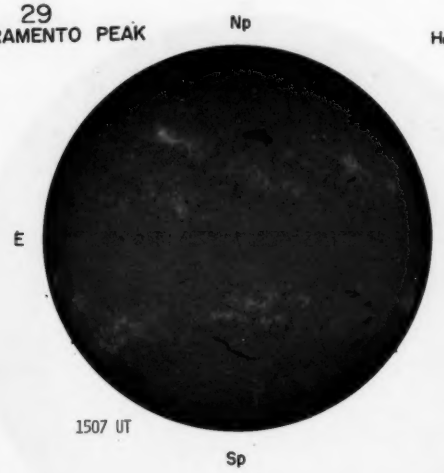
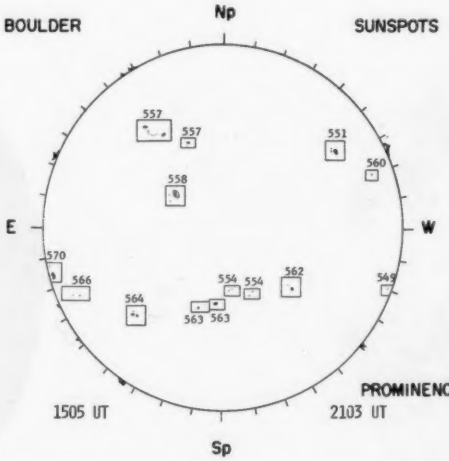
SACRAMENTO PEAK



Hα

1507 UT

BOULDER



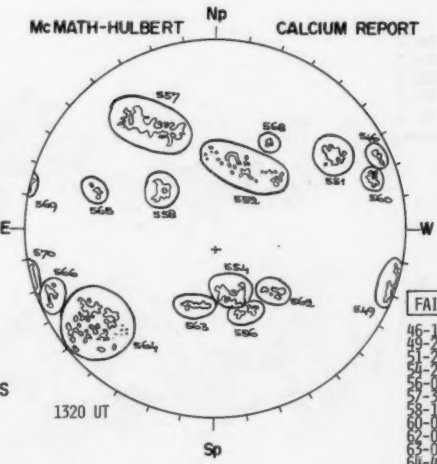
SUNSPOTS

PROMINENCES

1505 UT

2103 UT

McMATH-HULBERT



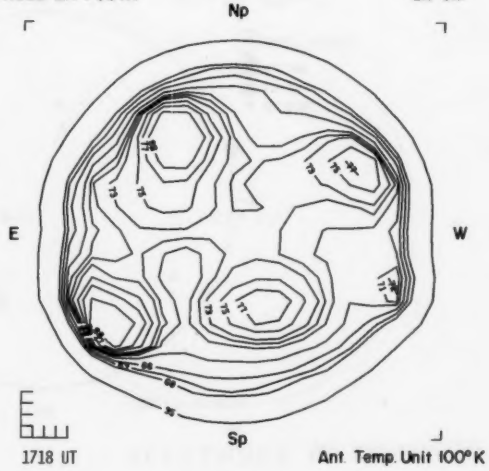
1320 UT

CALCIUM REPORT

FAIR	M
46-1000	2.5
49-2800	3.5
51-2000	3.5
54-2000	2.5
56-0700	2.5
57-3600	3.5
58-1000	2.5
60-0800	2.5
62-0600	2.5
63-0700	2.5
64-4000	3.0
66-1300	2.5
70-1800	3.0

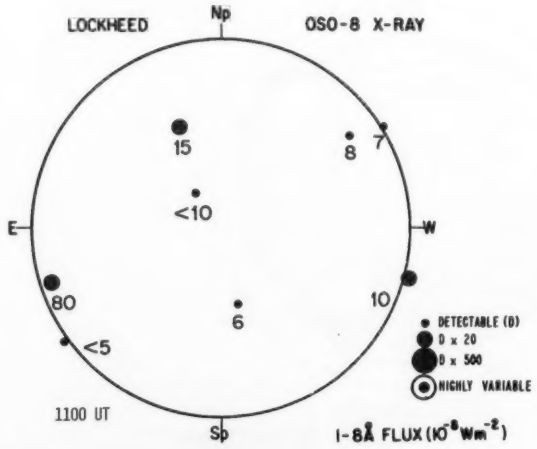
NOSC LA POSTA

2.0 CM

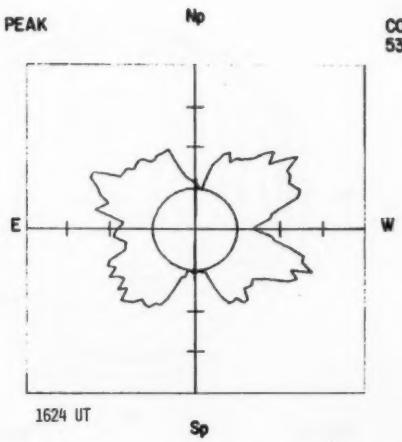

Np
E
W
Sp
73
73
73

SEPTEMBER 30, 1978 (P = 25.92, B_o = 6.77, L_o = 228.75)

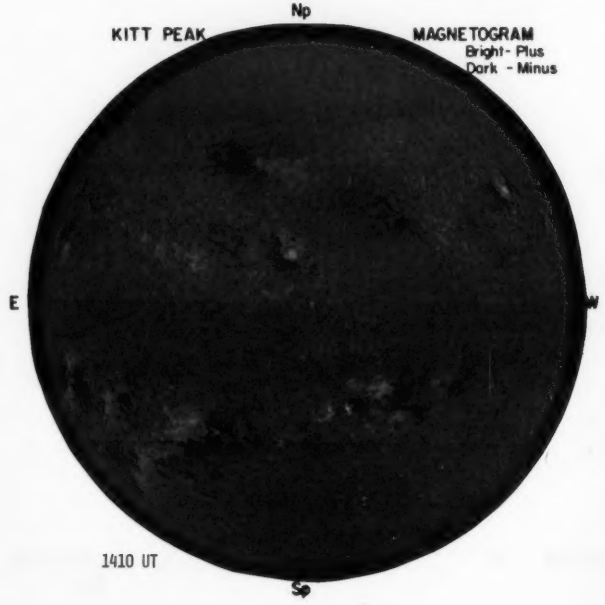
LOCKHEED OSO-8 X-RAY



SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å

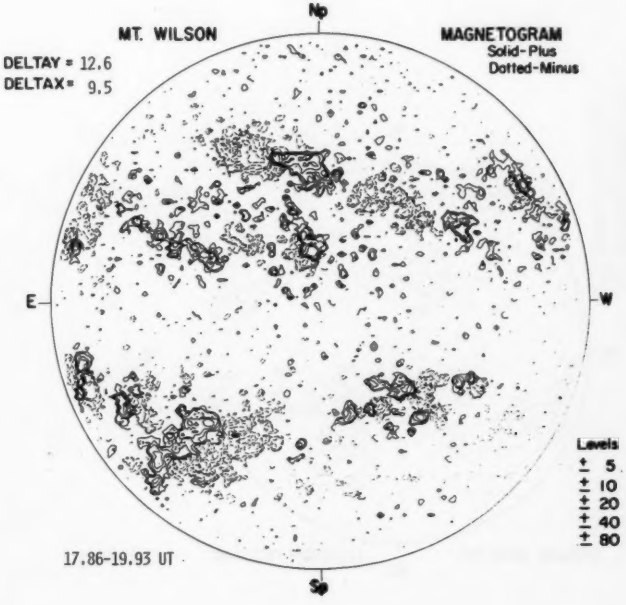


KITT PEAK MAGNETOGRAM Bright - Plus Dark - Minus



MT. WILSON MAGNETOGRAM Solid - Plus Dotted - Minus

DELTAY = 12.6
DELTAX = 9.5



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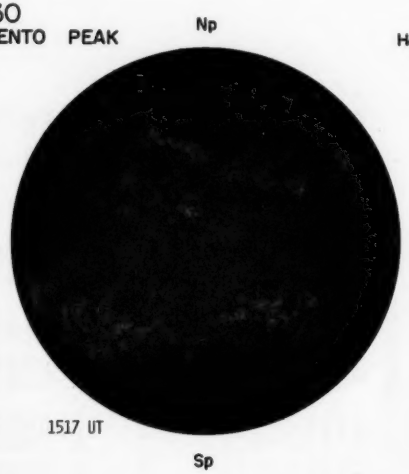
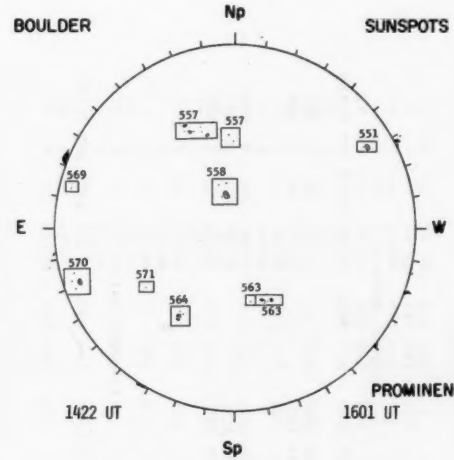
SACRAMENTO PEAK



Hα BOULDER



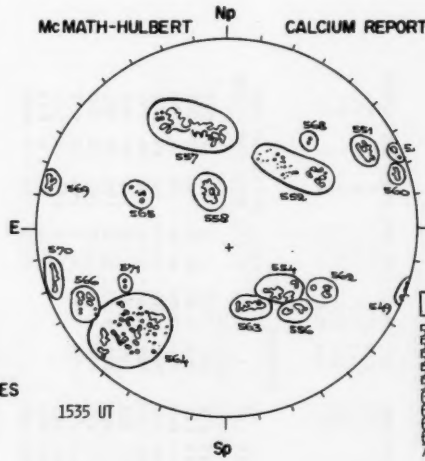
SUNSPOTS

PROMINENCES

1601 UT

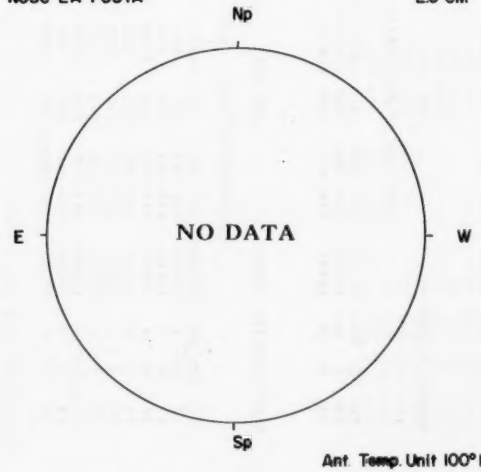
McMATH-HULBERT

CALCIUM REPORT



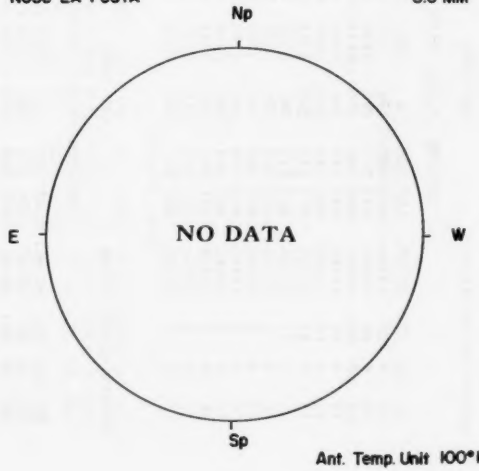
FAIR	M
51-1500	3.0
54-1600	2.5
56-0600	2.5
57-3500	3.0
58-1000	2.5
63-0600	2.5
64-3800	2.5
66-1100	2.5
69-0900	3.5
70-1500	3.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

REGIONS OF SOLAR ACTIVITY

SEPTEMBER 1978

MCMATH REGION 15515 CMP DATE 1.2

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15515	S12 E09	263	100	1.0									

MCMATH REGION 15496 CMP DATE 1.3

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	25	15496	N20 E90	261	300	1.5									
78	8	26	15496	N19 E77	261	1200	3.0	20185	N19 E70	267	(AP)	3	B	60	3	CRO
78	8	27	15496	N19 E64	260	1100	3.5	20185	N19 E59	265	(B)	4	B	90	18	DAI
78	8	28	15496	N20 E49	260	1700	3.0	20185	N19 E47	263	(B)	4	B	20	9	CRO
78	8	29	15496	N20 E36	262	1500	2.5	20185	N20 E35	262	(B)	4	B	60	14	DRI
78	8	30	15496	N20 E23	262	1200	2.0	20185	N20 E23	262	(B)	4	B	50	13	BXO
78	8	31	15496	N20 E10	262	1400	3.0	20185	N20 E08	263	(B)	4	R	140	34	ERI
78	9	1	15496	N20 W03	261	1500	3.0	20185	N20 W05	261	(B)	5	B	190	23	ESI
78	9	2	15496	N20 W18	261	1500	3.0	20185	N20 W21	259	(B)	4	B	140	29	DSO
78	9	3	15496	N21 W30	260	1700	3.0	20185	N20 W38	259	(B)	4	B	190	13	DSO
78	9	4	15496	N21 W43	261	2000	3.0		N20 W43				B	120	10	DSO
78	9	5	15496	N21 W56	261	2000	3.0		N20 W55				B	70	6	DAO
78	9	6	15496	N21 W69	261	2500	2.5		N18 W71				B	30	2	HXX
78	9	7	15496	N23 W83	260	2700	2.0									

MCMATH REGION 15495 CMP DATE 2.1

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	25	15495	N34 E90	261	300	1.5									
78	8	26	15495	N33 E80	258	700	2.5		N32 E79				B	30	1	AXX
78	8	27	15495	N33 E70	254	400	1.5		N34 E69				B	30	2	BXO
78	8	28	15495	N34 E57	252	500	2.0									
78	8	29	15495	N34 E47	251	800	2.0									
78	8	30	15495	N35 E34	251	500	2.0		N31 E32				B	10	3	BXO
78	8	31	15495	N34 E20	252	600	1.5		N33 E16				R	10	3	BXO
78	9	1	15495	N34 E07	251	600	1.0		N36 E16				B	0	2	BXO

MCMATH REGION 15527 CMP DATE 2.4

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	6	15527	S14 W54	246	200	1.5									
78	9	7	15527	S14 W68	245	200	2.0									

MCMATH REGION 15522 CMP DATE 2.9

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	2	15522	N36 E05	238	600	2.5	20196	N37 W01	239	(B)	3	B	20	11	DRO
78	9	3	15522	N37 W07	237	800	2.5	20196	N36 W10	239	(BP)	3	B	10	6	CSO
78	9	4	15522	N38 W20	238	1000	2.5		N36 W22				B	50	6	CRO
78	9	5	15522	N38 W34	239	900	2.5		N36 W36				B	50	8	CRO
78	9	6	15522	N37 W50	242	1200	3.0		N36 W49				B	20	7	CSO
78	9	7	15522	N37 W64	241	1400	2.5		N38 W67				B	10	1	AXX
78	9	8	15522	N37 W75	240	1000	1.5									
78	9	9	15522	N37 W85	235	400	3.5		N37 W87				B	20	1	AXX
78	9	10	15522	N38 W90	228	500	2.0									

MCMATH REGION 15507 CMP DATE 3.5 RETURN OF REGION 15474 ROTATION 2

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	28	15507	S22 E84	225	500	2.5									
78	8	29	15507	S22 E70	228	700	2.5	20189	S21 E63	234	(AP)	4	B	20	3	AXX
78	8	30	15507	S21 E56	229	600	2.5	20189	S21 E49	236	(AP)	3	B	30	4	CRO
78	8	31	15507	S22 E42	230	900	2.0	20189	S21 E36	235	(AP)	4				
78	9	1	15507	S22 E27	231	1200	3.0	20189	S22 E20	236	(BP)	4	B	40	5	CSO
78	9	2	15507	S22 E13	230	1200	2.5	20189	S22 E04	234	(AP)	3	B	20	6	DSO
78	9	3	15507	S22 W01	231	1200	2.5	20189	S22 W04	233	(BP)	4	B	40	13	DSO
78	9	4	15507	S21 W13	231	1200	2.5		S20 W15				B	100	11	DAI

CONTD

REGIONS OF SOLAR ACTIVITY

SEPTEMBER 1978

MCMATH REGION 15507 (CONT) CMP DATE 3.5 RETURN OF REGION 15474 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	5	15507	S21 W26	231	1100	2.5		S21 W29				B	60	11	DAC
78	9	6	15507	S22 W40	232	1500	2.5		S23 W42				B	50	6	DAO
78	9	7	15507	S23 W54	231	1500	2.5		S22 W57				B	20	4	CAO
78	9	8	15507	S22 W65	230	1200	2.0									

MCMATH REGION 15516 CMP DATE 4.2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15516	N25 E48	224	300	1.0									
78	9	1	15516	N25 E35	223	300	1.5									
78	9	2	15516	N24 E21	222	400	2.0									
78	9	3	15516	N25 E08	222	400	1.5									
78	9	4	15516	N25 W05	223	200	1.0									
78	9	5	15516	N24 W18	223	200	1.0									

MCMATH REGION 15508 CMP DATE 4.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	28	15508	N17 E87	222	500	3.0									
78	8	29	15508	N15 E77	221	1800	3.5	20190	N16 E79	218	B	4	B	380	3	EKC
78	8	30	15508	N17 E65	220	1700	3.5	20190	N16 E65	220	(B)	5	B	470	14	DKI
78	8	31	15508	N16 E53	219	2200	3.0	20190	N17 E52	219	(B)	5				
78	9	1	15508	N16 E37	221	3200	3.5	20190	N16 E38	218	(B)	5	B	350	42	FAI
78	9		15508					20193	N16 E29	227	(B)	5	B	90	18	DAO
78	9	2	15508	N16 E23	220	4000	3.5	20190	N16 E20	218	(B)	4	B	380	26	DSI
78	9		15508					20193	N16 E12	226	(BP)	4				
78	9	3	15508	N16 E10	220	4800	3.0	20190	N16 E13	216	(B)	4	B	220	23	DSO
78	9		15508					20193	N16 E04	225	(B)	5	B	380	22	DAO
78	9	4	15508	N16 W03	221	4500	3.0		N16 W01				B	150	22	DSO
78	9		15508						N16 W10				B	360	41	EHC
78	9	5	15508	N17 W17	222	4000	3.0		N16 W13				B	110	30	DAO
78	9		15508						N16 W23				B	370	42	DKI
78	9	6	15508	N17 W30	222	3700	3.5		N15 W25				B	80	13	CSO
78	9		15508						N15 W35				B	260	16	DAI
78	9	7	15508	N17 W44	221	3700	3.0		N16 W42				B	130	9	CSO
78	9		15508						N18 W54				B	210	14	DAO
78	9	8	15508	N17 W56	221	3500	3.0	20190	N15 W61	221	(B)	4	B	140	14	DSO
78	9		15508					20193	N16 W71	231	(AP)	4	B	200	2	HSX
78	9	9	15508	N17 W71	221	3500	2.5	20190	N15 W72	221	(AP)	3	B	130	3	DSO
78	9		15508					20193	N16 W81	230	(AP)	4	B	160	1	HSX
78	9	10	15508	N17 W84	222	3100	2.5		N15 W83				B	70	1	HSX

MCMATH REGION 15510 CMP DATE 4.8

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	29	15510	S24 E85	213	800	1.5									
78	8	30	15510	S23 E70	215	700	1.5									
78	8	31	15510	S23 E56	216	600	2.0									

MCMATH REGION 15512 CMP DATE 5.3 RETURN OF PART OF REGION 15451 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	30	15512	N20 E85	200	400	1.5									
78	8	31	15512	N20 E73	199	700	1.5									
78	9	1	15512	N20 E60	198	1300	2.0									
78	9	2	15512	N20 E42	201	1000	2.0									
78	9	3	15512	N20 E30	200	800	2.0									
78	9	4	15512	N20 E17	201	900	1.5									
78	9	5	15512	N20 W02	207	700	1.0									
78	9	6	15512	N20 W15	207	400	1.5									
78	9	7	15512	N21 W28	205	300	1.5									
78	9	8	15512	N21 W39	204	400	1.5	20200	N19 W42	202	(B)	3	B	10	2	AXX
78	9	9	15512	N21 W54	204	400	1.5		N20 W48				B	20	4	BXO
78	9	10	15512	N21 W66	204	600	2.0		N19 W67				B	0	1	AXX
78	9	11	15512	N21 W80	205	400	1.0									

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MCMATH REGION 15526 CMP DATE 5.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	3	15526	S22 E23	207	200	2.0	20197	S20 E12	217	(AP)	2				
78	9		15526					20198	S22 E23	206	(B)	3	B	10	4	BXO
78	9	4	15526	S21 E10	208	300	2.0		S20 E09				B	10	6	BXO
78	9	5	15526	S21 W03	208	400	2.5		S25 W08				B	0	2	AXX
78	9		15526						S21 W04				B	40	16	BXO
78	9	6	15526	S22 W15	207	1200	2.5		S22 W17				B	310	25	DAC
78	9	7	15526	S22 W31	208	1600	3.0		S23 W31				B	240	31	DAI
78	9	8	15526	S22 W42	207	1400	3.5	20198	S22 W49	209	(B)	3	B	170	20	DAI
78	9	9	15526	S23 W56	206	1200	3.0	20198	S22 W60	209	(B)	4	B	150	8	EAO
78	9	10	15526	S23 W70	208	1300	2.5		S22 W72				B	110	4	EAO
78	9	11	15526	S21 W81	206	900	2.0									

MCMATH REGION 15509 CMP DATE 5.7 RETURN OF REGIONS 15460 AND 15470 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	29	15509	S30 E89	209	400	2.5		S30 E81				B	30	2	HAX
78	8	30	15509	S30 E76	209	1000	3.5	20191	S30 E68	217	(B)	4	B	130	4	EAI
78	8	31	15509	S30 E63	209	2400	3.0	20191	S29 E57	214	(B)	4				
78	9	1	15509	S31 E50	208	4600	3.5	20191	S30 E43	213	(BF)	5	B	380	38	EAI
78	9		15509					20194	S35 E68	196	(AP)	4	B	40	4	DSO
78	9	2	15509	S31 E36	207	5500	3.5	20191	S30 E30	208	(D)	4	B	460	37	EAI
78	9		15509					20194	S35 E48	190	(BF)	3	B	30	14	DSO
78	9	3	15509	S31 E24	206	6000	3.5	20191	S31 E21	208	(B)	5	B	870	42	EKC
78	9		15509					20194	S37 E41	188	(BF)	4	B	50	15	CSI
78	9	4	15509	S31 E14	204	6200	3.5		S32 E24				B	30	7	CRO
78	9		15509						S30 E09				B	760	97	FKC
78	9	5	15509	S30 E03	202	6500	3.5		S33 W12				B	10	7	BXO
78	9		15509						S30 W04				B	620	96	FKC
78	9	6	15509	S31 W10	202	6900	3.5		S31 W16				B	720	58	FAC
78	9	7	15509	S31 W24	201	7200	3.5		S31 W30				B	750	81	FAC
78	9	8	15509	S31 W36	201	6800	3.5	20191	S31 W45	205	(B)	4	B	500	52	FAI
78	9	9	15509	S32 W51	201	7100	3.0	20191	S31 W57	206	(B)	4	B	580	35	FAC
78	9	10	15509	S32 W63	201	6800	3.0		S31 W67				B	490	18	FAC
78	9	11	15509	S32 W75	200	5400	3.0	20191	S31 W76	200	B	2	B	130	3	ESO

MCMATH REGION 15531 CMP DATE 5.7

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	10	15531	S15 W65	203	300	2.0									
78	9	11	15531	S13 W78	203	200	1.5									

MCMATH REGION 15517 CMP DATE 6.5 RETURN OF PART OF REGION 15451 ROTATION 4

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15517	N16 E84	188	400	1.0									
78	9	1	15517	N16 E70	188	700	1.5									
78	9	2	15517	N16 E53	190	1000	1.5									
78	9	3	15517	N17 E40	190	1200	1.5									
78	9	4	15517	N17 E29	189	800	1.5									
78	9	5	15517	N17 E13	192	900	1.5									
78	9	6	15517	N17 W01	193	600	1.5									
78	9	7	15517	N17 W15	192	700	1.5									
78	9	8	15517	N18 W26	191	400	1.5									
78	9	9	15517	N18 W42	192	400	1.5									
78	9	10	15517	N18 W55	193	400	1.5									
78	9	11	15517	N19 W67	192	400	1.0									

MCMATH REGION 15519 CMP DATE 6.6

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15519	S34 E80	192	900	2.0									

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MCMATH REGION 15518 CMP DATE 7.2 RETURN OF REGION 15454 ROTATION 2

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	8	31	15518	S25 E85	187	1800	2.0									
78	9	1	15518	S25 E72	186	1800	1.5	20195	S20 E65	191	(AP)	4	B	40	1	HSX
78	9	2	15518	S25 E59	184	1800	2.0	20195	S20 E49	189	(AP)	3	B	10	2	HSX
78	9	3	15518	S25 E47	183	2000	2.0	20195	S20 E40	189	(AP)	4	B	10	4	HSX
78	9	4	15518	S26 E34	184	2200	2.0		S19 E26				B	20	3	AXX
78	9	5	15518	S26 E21	184	1800	2.0		S19 E13				B	10	2	AXX
78	9	6	15518	S25 E09	183	1900	2.0		S19 E01				B	0	1	AXX
78	9	7	15518	S25 W05	182	1800	2.0									
78	9	8	15518	S25 W16	181	1800	2.0									
78	9	9	15518	S25 W30	180	1600	1.5									
78	9	10	15518	S25 W43	181	1600	2.0									
78	9	11	15518	S26 W55	180	1200	2.0									

MCMATH REGION 15528 CMP DATE 7.3

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	8	15528	N23 W16	181	400	1.5									
78	9	9	15528	N23 W32	182	400	1.0									
78	9	10	15528	N23 W45	183	200	1.5									
78	9	11	15528	N23 W58	183	200	2.0									

MCMATH REGION 15520 CMP DATE 8.3 RETURN OF PART OF REGION 15451 ROTATION 4

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	1	15520	N27 E84	174	300	1.0									
78	9	2	15520	N27 E72	171	500	1.5									
78	9	3	15520	N27 E60	170	600	2.0									
78	9	4	15520	N27 E47	171	900	1.5									
78	9	5	15520	N27 E34	171	800	2.0									
78	9	6	15520	N27 E22	170	800	1.5									
78	9	7	15520	N26 E09	168	1000	1.0									
78	9	8	15520	N26 W03	168	800	1.5									
78	9	9	15520	N26 W16	166	700	1.5									
78	9	10	15520	N26 W29	167	700	1.5									
78	9	11	15520	N26 W42	167	600	1.5									

MCMATH REGION 15521 CMP DATE 8.3

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	1	15521	S13 E90	168	300	1.0									
78	9	2	15521	S15 E72	165	1000	2.5		S15 E72				B	10	1	AXX
78	9	3	15521	S15 E64	166	1800	3.0	20199	S14 E60	169	X	1	B	10	3	BXO
78	9	4	15521	S15 E50	168	1600	3.0									
78	9	5	15521	S15 E37	168	1200	3.0									
78	9	6	15521	S15 E24	168	1000	2.5									
78	9	7	15521	S15 E10	167	1200	2.5									
78	9	8	15521	S15 W01	166	1200	3.0									
78	9	9	15521	S15 W17	167	1200	2.5									
78	9	10	15521	S15 W31	169	1200	3.0									
78	9	11	15521	S15 W44	169	900	3.0									

MCMATH REGION 15524 CMP DATE 10.0

			CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	4	15524	S19 E71	147	400	3.0		S18 E69				B	0	1	AXX
78	9	5	15524	S19 E59	146	500	3.0		S18 E55				B	50	4	BXO
78	9	6	15524	S19 E46	146	400	3.0		S18 E42				B	10	6	BXO
78	9	7	15524	S19 E31	146	500	2.5									
78	9	8	15524	S19 E20	145	500	2.0		S16 E17				B	20	6	BXO
78	9	9	15524	S19 E04	146	300	2.0									
78	9	10	15524	S19 W09	147	300	2.0									
78	9	11	15524	S18 W23	148	300	2.5									
78	9	13	15524						S22 W03				B	20	4	BXO

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MCMATH REGION 15523 CMP DATE 10.7 RETURN OF PART OF REGION 15467 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	4	15523	N21 E80	138	800	1.0									
78	9	5	15523	N21 E70	135	700	1.0									
78	9	6	15523	N20 E56	136	400	1.0									
78	9	7	15523	N20 E41	136	200	2.0									
78	9	8	15523	N21 E30	135	200	2.0									
78	9	9	15523	N22 E14	136	300	1.5									
78	9	10	15523	N22 E01	137	400	2.0		N20 W01				B	10	2	AXX
78	9	11	15523	N21 W13	138	500	2.0									
78	9	12	15523					20204	N17 W16	126	(B)	3	B	20	2	BXO
78	9	13	15523					20204	N18 W33	130	(AP)	3				
78	9	15	15523	N21 W64	137	500	1.0									
78	9	16	15523	N21 W77	136	300	1.0									

MCMATH REGION 15537 CMP DATE 11.4

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	15	15537	N18 W54	127	300	1.5									
78	9	16	15537	N18 W68	127	300	1.5									

MCMATH REGION 15525 CMP DATE 12.3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	5	15525	N33 E87	118	900	3.5		N33 E79				B	130	2	DSO
78	9	6	15525	N32 E75	117	1200	3.5		N32 E72				B	470	13	EAI
78	9	7	15525	N31 E61	116	1400	4.0		N32 E60				B	360	21	EAI
78	9	8	15525	N32 E50	115	1500	3.0	20201	N32 E42	118	(B)	4	B	280	19	ESI
78	9	9	15525	N33 E35	115	2000	3.0	20201	N32 E32	117	(B)	5	B	210	21	EAI
78	9	10	15525	N33 E22	116	2000	3.5		N32 E19				B	170	16	ESI
78	9	11	15525	N33 E09	116	2000	3.5	20201	N32 E08	116	(B)	4	B	170	22	ESI
78	9	12	15525					20201	N32 W05	115	(B)	4	B	190	24	EAI
78	9	13	15525					20201	N32 W18	115	(B)	5	B	120	27	ESI
78	9	14	15525						N30 W29				B	80	12	ESO
78	9	15	15525	N33 W42	115	1800	3.0	20201	N31 W48	119	(AP)	4	B	70	1	HSX
78	9	16	15525	N33 W54	113	1800	3.0	20201	N31 W62	120	(AP)	5	B	20	1	HSX
78	9	17	15525	N33 W66	110	1800	3.0		N31 W78				B	10	1	AXX
78	9	18	15525	N33 W81	111	1800	2.0									
78	9	19	15525	N33 W90	109	1000	1.0									

MCMATH REGION 15538 CMP DATE 13.9

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	12	15538					20205	S23 E15	95	(AP)	3	B	30	2	CRO
78	9	13	15538					20205	S23 E04	93	(B)	3				
78	9	14	15538						S22 W09				B	10	4	BXX
78	9	15	15538	S23 W21	94	200	2.0	20205	S23 W25	96	(AP)	3	B	0	1	AXX
78	9	16	15538	S23 W32	91	400	1.0									
78	9	17	15538	S23 W45	89	300	1.5									
78	9	18	15538	S24 W60	90	200	1.0									
78	9	19	15538	S24 W72	91	400	1.0									

MCMATH REGION 15530 CMP DATE 15.1

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	8	15530	N16 E86	79	1000	2.0	20202	N16 E75	85	(AP)	4	B	60	2	HSX
78	9	9	15530	N17 E71	79	1700	3.0	20202	N16 E66	83	(BP)	5	B	420	5	CKO
78	9	10	15530	N17 E57	81	2000	3.5		N17 E55				B	250	7	EAO
78	9	11	15530	N17 E44	81	2000	3.5	20202	N16 E39	85	(BP)	5	B	170	7	CSO
78	9	12	15530					20202	N17 E27	83	AP	5	B	160	2	HSX
78	9	13	15530					20202	N17 E16	81	(BP)	6	B	120	10	CSO
78	9	14	15530						N17 E03				B	140	5	CSO
78	9	15	15530	N18 W06	79	1200	3.0	20202	N17 W12	83	(AP)	5	B	150	4	CSO
78	9	16	15530	N18 W18	77	1200	2.5	20202	N16 W26	84	(AP)	5	B	150	1	HSX
78	9	17	15530	N18 W31	75	1000	3.0		N17 W41				B	120	1	HSX
78	9	18	15530	N18 W47	77	1200	2.5		N17 W53				B	120	1	HSX
78	9	19	15530	N18 W58	77	1200	2.5	20202	N15 W68	83	(AF)	4	H	50	1	HSX
78	9	20	15530	N18 W72	77	1200	2.0	20202	N15 W85	86	AP	2	R	120	1	HSX

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MCMATH REGION 15530 (CONT) CMP DATE 15.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	21	15530	N19 W85	76	700	1.0									

MCMATH REGION 15539 CMP DATE 16.2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	15	15539	S16 E09	64	100	2.0	20210	S16 E07	64	(B)	3	B	30	3	CSO
78	9	16	15539	S16 W05	64	200	1.0		S15 W07				B	0	1	AXX
78	9	17	15539	S16 W19	63	200	2.5		S15 W22				B	10	3	HSX
78	9	18	15539	S16 W34	64	400	3.0		S16 W34				B	60	5	DSO
78	9	19	15539	S17 W45	64	600	2.5	20215	S17 W50	65	(B)	3	H	20	6	DRO
78	9	20	15539	S17 W59	64	800	2.5	20215	S17 W66	67	B	1	R	40	4	BXO
78	9	21	15539	S17 W73	64	700	2.0	20215	S17 W77	69	B	1				

MCMATH REGION 15535 CMP DATE 16.9

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	11	15535	N16 E70	55	500	1.0									
78	9	13	15535					20207	N20 E48	49	(B)	4	B	10	3	BXO
78	9	14	15535						N20 E34				B	30	8	BXX
78	9	15	15535	N18 E20	53	700	2.5		N19 E20				B	10	3	BXO
78	9	16	15535	N18 E05	54	800	2.5	20212	N19 E07	51	(B)	3	B	0	1	AXX
78	9	17	15535	N18 W09	53	800	2.0									
78	9	18	15535	N18 W23	53	600	2.0		N19 W21				B	10	2	BXO
78	9	19	15535	N18 W34	53	800	2.5									
78	9	20	15535	N18 W46	51	700	2.5									
78	9	21	15535	N18 W61	52	600	2.5									
78	9	22	15535	N18 W73	53	600	2.0									
78	9	23	15535	N18 W85	52	600	1.0									

MCMATH REGION 15533 CMP DATE 17.1 RETURN OF PART OF REGION 15477 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	10	15533	S18 E88	50	300	1.0									
78	9	11	15533	S18 E75	50	700	1.5									
78	9	15	15533	S18 E21	52	600	2.0									
78	9	16	15533	S18 E08	51	600	2.0									
78	9	17	15533	S18 W06	50	600	2.0									
78	9	18	15533	S19 W21	51	500	1.5									
78	9	19	15533	S19 W33	52	700	2.0									
78	9	20	15533	S19 W46	51	700	2.0									
78	9	21	15533	S19 W61	52	600	2.0									
78	9	22	15533	S20 W73	53	600	2.0									

MCMATH REGION 15532 CMP DATE 18.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	10	15532	N37 E85	53	600	2.0		N38 E87				E	80	2	HSX
78	9	11	15532	N37 E82	43	2000	2.5	20203	N37 E79	45	(B)	4	B	110	3	ESO
78	9	12	15532					20203	N37 E68	42	(B)	5	B	380	6	EAO
78	9	13	15532					20203	N37 E53	44	(B)	5	B	250	11	ESO
78	9	14	15532						N36 E44				B	190	17	ESO
78	9	15	15532	N37 E31	42	3000	3.0	20203	N36 E29	42	(B)	5	B	150	5	ESO
78	9	16	15532	N37 E17	42	2800	3.0	20203	N37 E14	44	(AP)	5				
78	9		15532					20213	N33 E19	39	(B)	4	B	80	4	ESO
78	9	17	15532	N37 E05	39	2800	3.0		N36 E03				B	40	4	DSO
78	9	18	15532	N36 W09	39	3000	3.0		N37 W14				B	70	1	HSX
78	9	19	15532	N36 W20	39	2800	3.0	20203	N37 W28	43	(AP)	4	H	30	1	HSX
78	9	20	15532	N36 W33	38	2800	3.0	20203	N37 W41	42	(AP)	5	R	90	3	CSO
78	9	21	15532	N36 W46	37	2800	3.0	20203	N37 W50	42	(AP)	4	B	60	1	HSX
78	9	22	15532	N37 W57	37	2800	3.0	20203	N37 W62	41	(AP)	4	B	50	1	HSX
78	9	23	15532	N37 W68	35	1800	2.5	20203	N37 W76	42	(AP)	4	B	60	1	HSX
78	9	24	15532	N38 W80	34	1600	2.0	20203	N37 W88	41	AP	4	B	100	1	HSX
78	9	25	15532	N41 W88	29	400	1.0									

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MCMATH REGION 15540 CMP DATE 18.0 RETURN OF PART OF REGION 15477 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	11	15540	S24 E85	40	400	1.0									
78	9	15	15540	S24 E33	40	700	2.0									
78	9	16	15540	S24 E19	40	800	1.5									
78	9	17	15540	S24 E05	39	700	1.0									
78	9	18	15540	S25 W09	39	600	1.0									
78	9	19	15540	S25 W20	39	600	1.0									
78	9	20	15540	S25 W34	39	600	1.0									
78	9	21	15540	S25 W48	39	600	1.0									
78	9	22	15540	S25 W60	40	600	1.0									

MCMATH REGION 15536 CMP DATE 18.8

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	11	15536	N27 E88	37	500	2.0									
78	9	12	15536					20206	N28 E75	35	(AP)	5	B	200	1	HKX
78	9	13	15536					20206	N28 E62	35	(BP)	6	B	370	2	HKX
78	9	14	15536						N28 E49				B	330	8	CKO
78	9	15	15536	N28 E40	33	2500	3.5	20206	N28 E35	36	(BP)	6	B	360	4	CKO
78	9	16	15536	N28 E28	31	2500	3.5	20206	N28 E22	36	(AP)	5	B	240	5	CSO
78	9	17	15536	N28 E15	29	2000	3.0		N27 E11				B	170	4	CSO
78	9	18	15536	N28 E00	30	1700	3.0		N27 W04				B	320	1	HHX
78	9	19	15536	N28 W11	30	1700	3.0	20206	N28 W19	34	(AP)	5				
78	9	20	15536	N28 W24	29	1700	3.0	20206	N28 W33	34	(AP)	5				
78	9	21	15536	N28 W38	29	1700	3.0	20206	N28 W42	34	(AP)	5	B	180	2	HSX
78	9	22	15536	N28 W50	30	1700	3.0	20206	N28 W55	34	(AP)	5	B	220	1	HSX
78	9	23	15536	N27 W63	30	1500	2.5	20206	N28 W68	34	(AP)	5	B	200	1	HSX
78	9	24	15536	N28 W75	29	1200	2.5	20206	N27 E81	232	AP	4				
78	9	25	15536	N28 W89	30	400	1.5									

MCMATH REGION 15541 CMP DATE 19.5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	13	15541					20209	S28 E75	22	X	2	B	60	2	DSO
78	9	14	15541						S28 E61				B	80	12	DRI
78	9	15	15541	S26 E53	20	2800	3.5	20209	S27 E49	22	(B)	4	B	150	8	EAI
78	9	16	15541	S26 E39	20	2800	3.5	20209	S28 E34	24	(BP)	3	B	50	10	ESO
78	9	17	15541	S26 E24	20	2300	3.5		S27 E18				B	50	13	DAO
78	9	18	15541	S27 E10	20	2600	3.5		S28 E07				B	100	12	EAO
78	9	19	15541	S27 E00	19	2600	3.0	20209	S28 W07	22	(B)	3	H	90	7	ERO
78	9	20	15541	S27 W14	19	2600	3.0		S28 W17				R	40	15	BXO
78	9	21	15541	S27 W29	20	2600	3.0		S28 W23				B	0	1	AXX
78	9	22	15541	S27 W40	20	2600	3.0									
78	9	23	15541	S28 W52	19	2300	2.5									
78	9	24	15541	S28 W64	18	2300	2.5									
78	9	25	15541	S28 W78	19	1200	1.5									

MCMATH REGION 15543 CMP DATE 19.6

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	13	15543					20208	N33 E72	25	(B)	5	B	90	1	HSX
78	9		15543						N34 E63				B	410	31	DRC
78	9	15	15543	N35 E53	20	2400	4.0	20208	N36 E47	24	(B)	5	B	560	17	EKC
78	9	16	15543	N35 E37	22	2200	3.5	20208	N35 E35	23	(D)	5	B	1030	20	EKC
78	9		15543					20214	N30 E38	20	(AF)	4	B	40	1	HSX
78	9	17	15543	N35 E25	19	2500	3.0		N36 E20				B	730	19	EAC
78	9	18	15543	N35 E11	19	3000	3.5		N36 E09				B	1120	33	FKI
78	9	19	15543	N35 E00	19	3600	3.5	20208	N35 W05	20	(BY)	4	H	590	47	FKC
78	9	20	15543	N35 W13	18	4300	3.5	20208	N35 W19	20	(B)	4	R	1100	70	FKC
78	9	21	15543	N35 W27	18	4300	3.0	20208	N35 W28	20	(BY)	4	B	560	41	FAI
78	9	22	15543	N35 W39	19	4000	3.0	20208	N35 W40	19	(BY)	4	B	500	36	FAI
78	9	23	15543	N35 W51	18	4000	3.5	20208	N35 W52	18	(B)	4	B	840	59	FKI
78	9	24	15543	N35 W63	17	4500	3.0	20208	N35 W68	21	(B)	4	B	650	33	FKI
78	9	25	15543	N36 W77	18	4500	3.5	20208	N35 W80	20	B)	4	B	130	13	FSO
78	9	26	15543	N36 W88	16	2100	3.0									
78	9	27	15543	N35 W90	3	500	2.0									

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MCMATH REGION 15555 CMP DATE 20.6

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	23	15555	S17 W39	6	400	2.5	20220	S16 W41	7	(B)	4	B	30	4	CRO
78	9	24	15555	S17 W51	5	800	3.0	20220	S17 W55	8	(B)	4	B	40	4	DRO
78	9	25	15555	S16 W64	5	800	2.5	20220	S17 W71	11	(AP)	4	B	10	1	HSX
78	9	26	15555	S16 W78	6	400	1.0									

MCMATH REGION 15553 CMP DATE 20.8

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	22	15553	N00 W24	4	100	1.0									
78	9	23	15553	N00 W37	4	100	1.0									

MCMATH REGION 15542 CMP DATE 21.7 RETURN OF REGION 15504 ROTATION 2

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	15	15542	S17 E83	351	1500	2.0	20211	S22 E79	353	AP	2				
78	9	16	15542	S21 E68	352	1500	2.5	20211	S22 E66	353	(AP)	4	B	50	1	HSX
78	9	17	15542	S20 E53	352	1500	2.5		S22 E50				B	50	1	HSX
78	9	18	15542	S21 E39	352	1400	2.0		S22 E37				B	100	1	HSX
78	9	19	15542	S22 E26	352	1600	2.0	20211	S22 E24	352	(AP)	3	H	30	5	CSO
78	9	20	15542	S21 E14	352	1400	2.0	20211	S22 E08	354	(AP)	3	R	50	6	CAO
78	9	21	15542	S22 E00	352	1600	2.5	20211	S22 W01	354	(AP)	3	B	50	14	DAI
78	9	22	15542	S22 W10	350	1700	3.0	20211	S22 W13	352	(AP)	4	B	50	18	DAI
78	9	23	15542	S22 W22	349	1600	3.0	20211	S22 W27	353	(AP)	4	B	60	13	DAI
78	9	24	15542	S23 W34	348	1600	3.0	20211	S22 W40	353	(AP)	4	B	120	15	DAC
78	9	25	15542	S23 W47	348	1400	3.0	20211	S22 W54	354	(AP)	5	B	60	16	DRI
78	9	26	15542	S24 W62	350	1400	3.0	20211	S22 W68	354	AP	1	B	40	3	BXO
78	9	27	15542	S22 W80	353	1200	2.5		S22 W82				B	10	1	AXX

MCMATH REGION 15547 CMP DATE 22.0 RETURN OF REGION 15502 ROTATION 2

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	16	15547	N14 E73	347	300	1.5									
78	9	17	15547	N14 E58	347	400	2.5									
78	9	18	15547	N15 E44	347	300	2.5		N13 E40				B	10	2	BXO
78	9	19	15547	N15 E33	347	800	2.5	20216	N13 E27	349	(B)	2	H	20	8	CRO
78	9	20	15547	N15 E18	348	800	2.5	20216	N15 E12	350	(B)	4	R	40	16	CRO
78	9	21	15547	N15 E04	348	1000	2.5	20216	N15 E03	350	(B)	4	B	100	13	DSO
78	9	22	15547	N15 W08	348	1200	2.5	20216	N15 W10	349	(B)	4	B	150	18	DAI
78	9	23	15547	N15 W22	349	1300	2.0	20216	N15 W24	350	(B)	4	B	160	25	DAI
78	9	24	15547	N16 W35	349	1300	2.5	20216	N15 W38	351	(B)	4	B	80	15	DAI
78	9	25	15547	N15 W50	351	1500	3.0	20216	N15 W50	350	(BF)	4	B	60	12	CRO
78	9	26	15547	N15 W64	352	1500	2.5	20216	N15 W64	350	(B)	3	B	60	2	CRO
78	9	27	15547	N15 W77	350	1500	2.0	20216	N15 W80	353	B	1	B	10	3	BXO
78	9	28	15547	N15 W89	350	800	1.5									

MCMATH REGION 15559 CMP DATE 22.9

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15559	N32 W35	336	200	2.5	20226	N32 W36	336	(B)	3	B	10	3	CRO
78	9	26	15559	N33 W48	336	200	2.0									
78	9	27	15559	N31 W60	333	200	1.5									

MCMATH REGION 15548 CMP DATE 23.2

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	18	15548	S22 E60	331	200	1.5		S23 E57				B	10	2	BXO
78	9	19	15548	S21 E47	333	300	2.0									
78	9	20	15548	S22 E34	332	400	1.5									

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MCMATH REGION 15545 CMP DATE 23.5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	17	15545	N38 E77	328	200	1.5									

MCMATH REGION 15546 CMP DATE 24.2 RETURN OF REGION 15513 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	17	15546	N24 E87	318	800	3.0		N24 E80				B	70	1	HSX
78	9	18	15546	N25 E74	317	1900	3.0		N23 E69				B	170	3	CSO
78	9	19	15546	N25 E63	317	1900	3.5	20217	N25 E55	321	(BP)	5	H	140	11	DAO
78	9	20	15546	N25 E48	318	1900	3.5	20217	N24 E39	323	(BP)	5	R	170	20	DAO
78	9	21	15546	N25 E34	318	2000	3.0	20217	N26 E32	321	(BP)	5	B	100	9	CSI
78	9	22	15546	N24 E21	319	1700	3.0	20217	N25 E18	321	(AP)	4	B	100	10	DAO
78	9	23	15546	N24 E08	319	1500	3.5	20217	N25 E06	320	(AP)	4	B	80	5	BSI
78	9	24	15546	N25 W05	319	1500	3.0	20217	N25 W07	320	(AP)	5	B	80	1	HSX
78	9	25	15546	N25 W18	319	1500	2.5	20217	N25 W21	321	(AP)	5	B	50	2	HAX
78	9	26	15546	N25 W31	319	1500	3.0	20217	N25 W34	320	(AP)	4	B	60	2	HSX
78	9	27	15546	N25 W44	317	1300	3.0	20217	N24 W46	319	(AP)	4	B	20	2	HSX
78	9	28	15546	N25 W56	317	1000	2.5	20217	N25 W59	319	(AP)	3	B	10	1	AXX
78	9	29	15546	N25 W70	318	1000	2.5									
78	9	30	15546	N25 W83	317	900	1.5									

MCMATH REGION 15549 CMP DATE 24.2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	19	15549	S12 E63	317	400	3.5	20218	S12 E55	321	(AP)	3				
78	9	20	15549	S13 E47	319	1000	3.5	20218	S12 E41	321	(B)	5	R	150	14	CAO
78	9	21	15549	S13 E33	319	1000	3.0	20218	S12 E32	321	(BP)	5	B	240	13	DAO
78	9	22	15549	S13 E21	319	1600	3.0	20218	S13 E17	322	(BP)	5	B	260	10	DAO
78	9	23	15549	S13 E08	319	1500	3.0	20218	S13 E03	323	(BP)	5	B	160	15	DAO
78	9	24	15549	S14 W06	320	1500	3.0	20218	S13 W13	326	(AP)	5	B	140	14	DAO
78	9		15549					20223	S18 W10	323	(B)	3	B	10	5	BXI
78	9	25	15549	S15 W19	320	1500	3.0	20218	S13 W26	326	(AP)	5	B	60	5	HAX
78	9		15549					20223	S18 W22	322	(B)	5	B	50	3	DSO
78	9	26	15549	S15 W33	321	1700	3.0	20218	S12 W41	327	(AP)	5	B	100	3	HAX
78	9		15549					20223	S18 W37	323	(B)	5	B	70	7	DSI
78	9	27	15549	S16 W46	319	2100	3.0	20218	S13 W52	325	(AP)	5	B	30	2	DSO
78	9		15549					20223	S19 W47	320	(BF)	4	B	30	9	CSO
78	9	28	15549	S16 W60	321	2800	3.0	20218	S12 W68	328	(AP)	4	B	20	3	CSO
78	9		15549					20223	S18 W61	321	(B)	4	B	20	3	CRO
78	9	29	15549	S16 W74	322	2800	3.5		S18 W63				M	30	2	BXO
78	9		15549						S13 W68				M	70	2	CRO
78	9	30	15549	S17 W88	322	800	1.5									

MCMATH REGION 15560 CMP DATE 25.1

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	23	15560	N20 E19	308	100	1.0									
78	9	24	15560	N20 E07	307	100	1.0									
78	9	25	15560	N20 W07	308	300	2.0									
78	9	26	15560	N20 W20	308	300	2.5	20228	N21 W23	309	(B)	3	B	10	3	BXO
78	9	27	15560	N20 W34	307	600	3.0	20228	N21 W34	307	(B)	4	B	10	5	DSO
78	9	28	15560	N20 W48	309	800	2.5	20228	N20 W49	309	(AP)	4	B	20	4	DRO
78	9	29	15560	N20 W61	309	800	2.5	20228	N20 W64	311	(AP)	4	H	20	2	BXO
78	9	30	15560	N19 W74	308	800	2.0									
78	10	01	15560	N19 W87		700	2.0									

MCMATH REGION 15550 CMP DATE 25.3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	19	15550	S18 E81	300	400	1.5									
78	9	20	15550	S18 E63	303	200	1.0									
78	9	21	15550	S19 E49	303	200	1.0									
78	9	22	15550	S18 E37	303	100	1.5									
78	9	23	15550	S18 E23	304	200	1.0									
78	9	24	15550	S17 E10	304	300	1.0									

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SEPTEMBER 1978

MCMATH REGION 15572 CMP DATE 26.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	02	15572	S22 W85		400	3.0	20236	S23 W88		X	2				

MCMATH REGION 15551 CMP DATE 26.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	19	15551	N29 E90	290	200	1.0									
78	9	20	15551	N28 E80	286	900	3.0	20219	N28 E73	289	B	2	R	50	11	CRO
78	9	21	15551	N28 E66	286	800	2.0	20219	N29 E60	293	(B)	4	B	20	3	CSO
78	9	22	15551	N29 E53	287	1100	3.0	20219	N28 E47	292	(BP)	4	B	60	9	DSO
78	9	23	15551	N28 E37	290	1300	3.0	20219	N29 E32	294	(BP)	4	B	110	18	DAO
78	9	24	15551	N29 E23	291	1300	3.0	20219	N29 E19	294	(BP)	5	B	160	22	DAO
78	9	25	15551	N29 E10	291	1700	3.0	20219	N29 E05	295	(BP)	5	B	150	13	DAI
78	9	26	15551	N29 W04	292	1700	3.0	20219	N30 W08	294	(BP)	5	B	170	10	DSI
78	9	27	15551	N29 W17	290	2100	4.0	20219	N30 W21	294	(BP)	5	B	150	9	DSO
78	9	28	15551	N29 W31	292	2100	3.0	20219	N29 W34	294	(AP)	5	B	100	5	DSO
78	9	29	15551	N29 W45	293	2000	3.5	20219	N29 W47	294	(AP)	5	H	120	3	DSO
78	9	30	15551	N28 W58	292	1500	3.0	20219	N30 W61	295	(AP)	4	R	80	2	HSX
78	10	01	15551	N28 W71		1500	3.0	20219	N30 W75		(AP)	3	B	80	2	H
78	10	02	15551	N28 W87		1000	3.5	20219	N29 W88		(AP)	3				

MCMATH REGION 15561 CMP DATE 28.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15561	N03 E32	269	200	1.5									

MCMATH REGION 15568 CMP DATE 28.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	29	15568	N34 W10	268	200	1.5									
78	9	30	15568	N34 W33	267	100	1.0									

MCMATH REGION 15562 CMP DATE 28.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15562	S12 E37	264	300	2.0	20227	S12 E35	265	(B)	3	B	20	3	DSO
78	9	26	15562	S12 E24	264	400	2.0	20227	S13 E17	269	(AP)	4	B	20	1	HSX
78	9	27	15562	S12 E09	264	400	2.0	20227	S13 E04	269	(AP)	4	B	10	3	HSX
78	9	28	15562	S12 W06	267	600	2.0	20227	S13 W09	269	(AP)	3	B	20	5	CRO
78	9	29	15562	S12 W18	266	600	2.5	20227	S14 W23	270	(B)	3				
78	9	30	15562	S12 W31	265	400	2.0									
78	10	01	15562	S12 W44		500	2.0									
78	10	02	15562	S12 W57		500	2.0									

MCMATH REGION 15552 CMP DATE 28.8 RETURN OF REGION 15496 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	21	15552	N22 E85	267	300	1.0									
78	9	22	15552	N25 E80	260	1200	1.5									
78	9	23	15552	N24 E68	259	1000	1.0									
78	9	24	15552	N25 E57	257	1200	1.0									
78	9	25	15552	N24 E43	258	1000	1.5									
78	9	26	15552	N24 E30	258	1200	1.5									
78	9	27	15552	N24 E16	257	1200	1.5									
78	9	28	15552	N25 E03	258	1200	2.0		N29 E18				B	170	4	CAO
78	9	29	15552	N25 W11	259	1200	2.0									
78	9	30	15552	N25 W24	258	1000	1.5									
78	10	01	15552	N25 W36		1000	2.0									
78	10	02	15552	N26 W49		1000	1.5									
78	10	04	15552	N26 W75		800	1.0									
78	10	05	15552	N27 W88		400	1.0									

REGIONS OF SOLAR ACTIVITY

SEPTEMBER 1978

MCMATH REGION 15556 CMP DATE 28.8

				CALCIUM		PLAGE DATA				SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	23	15556	S18	E70	257	200	2.5	20221	S17	E71	255	B	1	B	30	2	BXO
78	9	24	15556	S18	E58	256	600	1.5	20221	S17	E55	258	(B)	3	B	30	2	BXO
78	9	25	15556	S18	E45	256	600	2.0	20221	S18	E45	255	(B)	3	B	10	2	AXX
78	9	26	15556	S18	E31	257	600	2.5	20221	S19	E28	258	(BP)	4	B	20	6	BXO
78	9	27	15556	S18	E17	256	600	2.5	20221	S19	E16	257	(AF)	3	B	10	5	BXO
78	9	28	15556	S19	E03	258	800	2.5										
78	9	29	15556	S19	W10	258	700	2.5										
78	9	30	15556	S19	W23	257	600	2.5										
78	10	01	15556	S19	W35		600	2.5										
78	10	02	15556	S18	W48		800	2.5	20237	S18	W50		(B)	2				
78	10	03	15556						20237	S19	W64		(AP)	3				
78	10	04	15556	S19	W74		900	2.5	20237	S19	W78		(AP)	3				

MCMATH REGION 15554 CMP DATE 29.3 RETURN OF REGION 15527 ROTATION 2

				CALCIUM		PLAGE DATA				SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	22	15554	S11	E90	250	300	1.5										
78	9	23	15554	S13	E80	247	1500	2.0	20222	S12	E75	251	B	1	B	30	8	BXO
78	9	24	15554	S13	E65	249	2000	3.5	20222	S11	E60	253	(B)	4	B	40	5	CRO
78	9	25	15554	S13	E50	251	1800	3.0	20222	S12	E46	254	(B)	4	B	30	9	DRO
78	9	26	15554	S13	E36	252	1700	3.0	20222	S12	E32	254	(B)	3	B	50	10	BXI
78	9	27	15554	S13	E23	250	1800	3.0	20222	S12	E17	256	(AP)	4				
78	9	28	15554	S13	E10	251	2000	2.5	20222	S13	E04	256	(AP)	3	B	20	5	CRO
78	9	29	15554	S13	W04	252	2000	2.5		S12	W10				M	10	3	BXO
78	9	30	15554	S13	W17	251	1600	2.5										
78	10	01	15554	S13	W30		1500	2.5		S18	W27				B	50	9	C
78	10	02	15554	S13	W43		1500	3.0		S18	W40				B	60	8	C
78	10	03	15554							S17	W54				B	10	4	C
78	10	04	15554	S14	W70		1300	2.0										

MCMATH REGION 15563 CMP DATE 30.1

				CALCIUM		PLAGE DATA				SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	25	15563	S17	E60	241	200	1.5										
78	9	26	15563	S18	E47	241	500	2.5	20229	S13	E44	242	(B)	2				
78	9	27	15563	S18	E35	238	300	3.0	20229	S17	E28	245	(AP)	3	B	10	1	HSX
78	9	28	15563	S18	E20	241	700	2.5	20229	S18	E14	246	(AP)	3	B	10	3	BXO
78	9		15563						20232	S18	E20	240	(B)	3	B	50	4	CRO
78	9	29	15563	S18	E07	241	700	2.5	20229	S17	E02	245	(BP)	3	M	20	2	BXO
78	9		15563						20232	S17	E06	241	(B)	3	M	20	3	BXO
78	9	30	15563	S18	W06	240	600	2.5	20229	S17	W12	246	(B)	4	R	50	10	DRO
78	10	01	15563	S18	W20		800	2.5	20229	S18	W27		(BG)	4				
78	10	02	15563	S18	W34		1200	2.5	20229	S18	W40		(BP)	3				
78	10	04	15563	S18	W60		1000	3.0										
78	10	05	15563	S19	W77		500	1.5										

Note: No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on September 12, 13 and 14, 1978.
No sunspot observations were made at Mt. Wilson on September 4, 5, 6, 7, 10, 14, 17 and 18, 1978.

DAILY CALCIUM PLAGE INDEX

SEPTEMBER 1978

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
78	9	1	28.8	78	9	11	20.3	78	9	21	39.1
78	9	2	39.5	78	9	12	*	78	9	22	38.3
78	9	3	47.6	78	9	13	*	78	9	23	33.0
78	9	4	50.1	78	9	14	*	78	9	24	31.3
78	9	5	48.3	78	9	15	33.3	78	9	25	29.4
78	9	6	50.0	78	9	16	36.3	78	9	26	29.0
78	9	7	46.4	78	9	17	34.7	78	9	27	33.7
78	9	8	39.0	78	9	18	37.6	78	9	28	36.4
78	9	9	28.5	78	9	19	41.7	78	9	29	40.1
78	9	10	26.2	78	9	20	44.0	78	9	30	32.1

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1978

DAY	UNIVERSAL TIME START	END	MAX	INP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
01	0612	0713	0626	1-	1				1				0610	15509
01	0731	0825	0740	1+	3	1		1	3		1		0734	15509
01	0831	0909	0840	1-	1				1				0833	X-RAY
01	0949	1030	1000	1	5			1	4		1		0945	15509
01	1134	1215	1146	1-	3			1	2		1		1135	15507
01	1215	1250	1222	1-	1				2		1		1221E	15509
01	1242	1352	1252	2	5	3		2	2		3		1244E	15509
01	1626	1637D	1637	1-	1				1		1		1627	15509
01	1710	1800	1717	1-	5	2	1	1	1	1	10		1711	15509
01	1834	1854	1842	1-	5	1				1	1		1836	15508
01	1940	2015	1953	1	5			1			6		*	
01	2022	2058D	2028	1-	3				1		1		2022E	15509
01	2144	2347	2230	;	;				1				2144	15509
01	2222	2333	2227	1-	5	1	1		2	1	6		2220	X-RAY
02	0009	0115D	0014	1-	3				1		2		0004	15509
02	0114	0226	0125	1-	3				1		2		0113	X-RAY
02	0552	0720	0551	2	5	4		4	3		3		0546E	15509
02	0812	0910	0822	1-	3				3				0810	X-RAY
02	1031	1040	1036	1-	5			1	3		1		1030	15509
02	1052	1100D	1100	1-	5	3		3	3		3		1047	15509
02	1129	1230	1142	1+	5	3	1	5	4		5		1131E	15509
02	1308	1350	1314	2	5	2	1	3	3		2		1305	15509
02	1416	1630	1442	1+	5	4	2	6	3		13		1415	15509
02	1812	1900	1827	1-	5	2		1	2		9		1810E	15509
02	1904	1923	1913	1-	5	1			1		7		1902	15509
02	2008	2023	2015	1-	5	1			2		4		2008	15509
02	2046	2115	2056	1-	5	1	1		2		8		2035	15509
02	2121E	2233	2130	1-	5				2		6		2118	X-RAY
03	0311	0416	0327	1-	1				1				0307	X-RAY
03	0645	0730	0652	1-	1				1				0643	X-RAY
03	0930	1010	0943	1	5	2		1	4		3		0935	15509
03	1600	1710	1615	1	5	1		2	2		1		1604	15521
03	1839	1924D	1857	1-	3						4		1838	15509
03	1924	1959	1933	1-	5	2			1		6		1921	15509
03	2221	2304	2227	1-	3				1		1		2223	15509
03	2341	0030	0004	1-	3				1		1		2348	15509
04	0149	0223	0202	1-	5			1	1		2		0149	15509
04	0426	0553D	0443	1	5	1		1	1		1		0420E	15509
04	0553E	0800	0636	1-	1				1				0554	X-RAY
04	0816	0925	0837	2	5	3		3	3		2		0812	15521
04	1250	1400	1300	1-	5	1		2	2		1		1250	15509
04	1603	1715	1625	1-	5	2			1		1		1600	15508
05	0513	0639	0519	1	1				1				0515	15523
05	0727	0812	0735	1-	1				1				0724	15512
05	1334	1457	1359	1	3						2		1336	15522
05	2245	2348D	2310	1-	1				1				2243	X-RAY
05	2348	0023D	2358	1-	1				1				2351	X-RAY
06	0023	0051	0028	1-	1				1				0023E	15525
06	0220	0306	0228	1-	1				1				0220	15509
06	0828	0850	0835	1	5			1	3				0826	15509
06	1050	1105	1054	1-	1				1		1		1052	15526
06	1122	1200	1125	1+	5	2	1	4	4		3		1118	15509
06	1316	1500	1337	1-	3			1	1		1		1314	15509
06	2220	2327D	2229	1-	5				1		3		2219	15526
06	2326	0036	2344	1-	5	1			2		2		2337	15526
07	0210	0230	0218	1-	1				1				0209	X-RAY
07	0602E	0743	0610	1-	3	1			1				0608E	15509
07	1203	1245	1215	1-	5			2	2		1		1205	X-RAY
07	1407	1515	1425	1-	3	1			1		1		1358	X-RAY
07	2332	0055	2358	1-	1				1				2330E	15518
08	0121	0222	0130	1-	3	1			1				0122E	15509
08	0239	0346	0248	1-	3			1	1				0239E	15509
08	1251	1500	1303	1	5	4	1	4	3		3		1252	15526
08	1838	1942	1902	1-	5	3		1	1	1	12		1836	15508
09	0006	0047	0013	1-	1				1				0006	15509
09	0608	0700	0614	1-	1				1				0602	X-RAY
10	0126	0151	0135	1-	1				1				0129	15509
10	1148	1215	1156	1	5	1		4	3		2		1151E	15525
11	1100	1200	1117	1-	1				1				1059E	15536
11	1408	1610	1418	1-	5			1			9		NF	
12	1403	1600	1425	1	5			1			10		NF	
12	2101	2124	2103	1-	1				1				2057	15530
12	2259	2332	2308	1-	1				1				2256	15530
13	1755	1841	1810	1-	5	1		1	2		13		1751	X-RAY
13	1948	2020	1951	1-	5						6		1946	X-RAY
13	2104	2135	2114	1-	5	1		1	2		8		2103	15543

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
14	0055	0214	0059	1-	1				1				0053	15543
15	0545	0734	0556	1-	1				1				0543E	15543
15	0945	1045	0955	1-	5	2	1	1	4		4		0944	15543
15	1352	1430	1400	1-	1				1		1		1352	15543
15	1820	1855	1824	1-	3						4		1824	15543
15	1913	1953	1929	1-	5	2		1			11		1909	15543
15	2059	2139	2102	1	5	1					7		2057	15543
16	0739	0840	0749	1-	1				1				0740	15543
16	0955	1013	1	1	1		1						1000	15541
16	1326	1533	1335	1	5	3	2	4	3	1	12		1328	15543
16	1752	1845	1802	1-	5	3	1	1	2	1	12		1752	X-RAY
16	1949	2047	2001	1-	5	2	1	1	1		11		1955	15543
17	0358	0653	0415	1	5	1		1	1		1		0404E	15543
17	0827	1044	0833	3	5	3	1	7	3		3		0827	15543
17	1300	1430	1310	1-	5	1	1	4	3		7		1256E	15543
17	1459	1600	1509	3	5	6	2	8	2		13		1459	15543
17	1953	2008	1955	1-	5	2	1				7		1949	15543
17	2028	2116	2038	1-	5	2	1		1		11		2025	15543
17	2243	2338D	2250	1-	5	1		1	1		1		2242	15543
17	2338E	0055	2350	1-	5			1	1		2		2336	X-RAY
18	0119	0242D	0143	1	5			1	1		1		0119E	15543
18	0305	0352	0307	1-	1				1				0302	X-RAY
18	0732	0815	0736	1-	1				1				0730E	15543
18	0926	0955	0930	1-	3	1		1	1		1		0923E	15541
20	2317	0021	2328	1-	5				2		1		2315	15542
21	0314	0419D	0320	1-	3				1		1		0321E	15543
21	0409E	0552D	0420	1	3	1			1		1		0416	15546
21	0552E	0722	0605	1-	1				1				0557	15549
21	1555	1635	1603	1-	1				1		1		1551	X-RAY
22	0915	1000	0928	1	1						1		0915	15551
22	1052	1145	1058	1-	3				1		2		1056	15551
22	1258	1320	1302	1	5			3	3		1		1253E	15551
22	1517	1555	1523	1-	1				1		1		1514	15551
23	0213	0323	0239	1-	1				1				0206	X-RAY
23	0945	1300	1020	2+	5	5	1	5	3		3		0947	15557
24	0208	0338	0233	1-	3				1				0210E	15557
24	0620	0745	0634	1+	3		1		1				0625E	15557
24	1141	1330	1149	1-	3			2	1		1		1139	X-RAY
24	1722	1855	1732	1	5	3	1	3	2	1	8		1720	15546
24	2109	2302	2125	1-	5	1		1	1	1	6		2112	15555
25	1837	1945	1845	1	5	1		1			5		1831	X-RAY
25	2023	2215	2045	1-	3			1			1		2022	15554
26	0738	0816	0745	1-	1				1				0737	15555
26	2122	2300	2148	1-	3				2				2120	X-RAY
27	0633	1030	0835	1-	1				1				0631	X-RAY
27	0827	0940	0836	1-	5	3		2	3		3		0823	15551
27	1435	1710	1500	2	5	6	1	5	3	1	12		1428	15551
27	1721	1907	1735	1	5	3	1	2	2	1	10		1719E	15551
29	0950	1040	0958	1-	5	1		3	3		1		0950	15551
29	1048	1405	1115	1-	5	1		2	3		1		1049	15564
30	2332	2358	2341	1-	1				1				2330	X-RAY

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-04	0000-2400 A46
01-02	0000-2400 A45
02	1315-1400 UM (13 kHz)
03-07	0000-2400 A3
09-11	0000-2400 A3
05	1045-1330 UM (16 kHz)
08	1730-1815 UM (13 & 16 kHz)
12	1000-1400 UM (16 kHz)
14	0000-2400 A3, 1830-1930 UM (13 kHz)
15-16	0000-2400 A5
16-30	0000-2400 A37
16	0000-2400 A3
18-30	0000-2400 A5
18-23	0000-2400 A3
19	1003-1337 UM (16 kHz)
24	0512-0608 TM
25-26	0000-2400 A3, 0000-2400 TN
26	1007-1343 UM (16 kHz)
28-30	0000-2400 A3
29	0931-0946 UM (16 kHz)

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1978

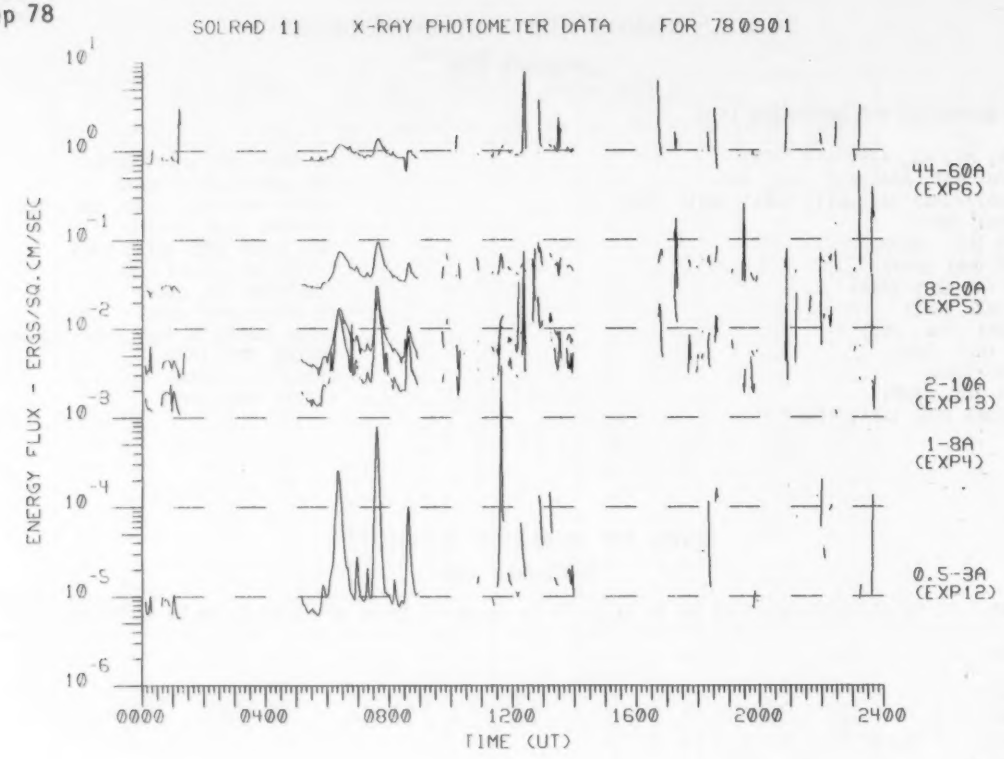
STATIONS REPORTING FOR SEPTEMBER 1978

AAVSO (A1, A3, A5, A19, A21, A26,
A28, A31, A34, A37, A40, A45,
A46) (SES) (A1, A31) (SEA) (A31) (SWF)
BEARLY (BY) (SWF)
CHILWORTH (CL) (SCNA)
DARMSTADT (DA) (SWF)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA, SES)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
JULIUSHUH (JH) (SWF)
KUHLUNGSBORN (KU) (SEA, SPA)
MC MATH (MC) (SWF, SCNA)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SES)
SOMERTON (SO) (SWF)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)
VSETIN (VS) (SEA)

SIDs BY McMATH REGION

SEPTEMBER 1978

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
REGION																														
15507	1																													
15508	1			1				1																						
15509	9	11	5	3		4	1	2	1	1																				
15512					1																									
15518			1	1																										
15522					1																									
15523					1																									
15525						1				1																				
15526						3		1																						
15530												2																		
15536											1																			
15541																1		1												
15542																				1	1									
15543													1	1	6	3	7	2												
15546																					1			1						
15549																					1									
15551																						4					3		1	
15554																									1					
15555																								1		1				
15557																							1	2						
15564																													1	
X-RAY	2	3	2	1	2		3			1			2			1	1	1			1		1	1	1	1	1			1
UNKNOWN											1	1																		
NO FP	1																													


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780901
ENERGY FLUX - ERGS/SQ.CM/SEC
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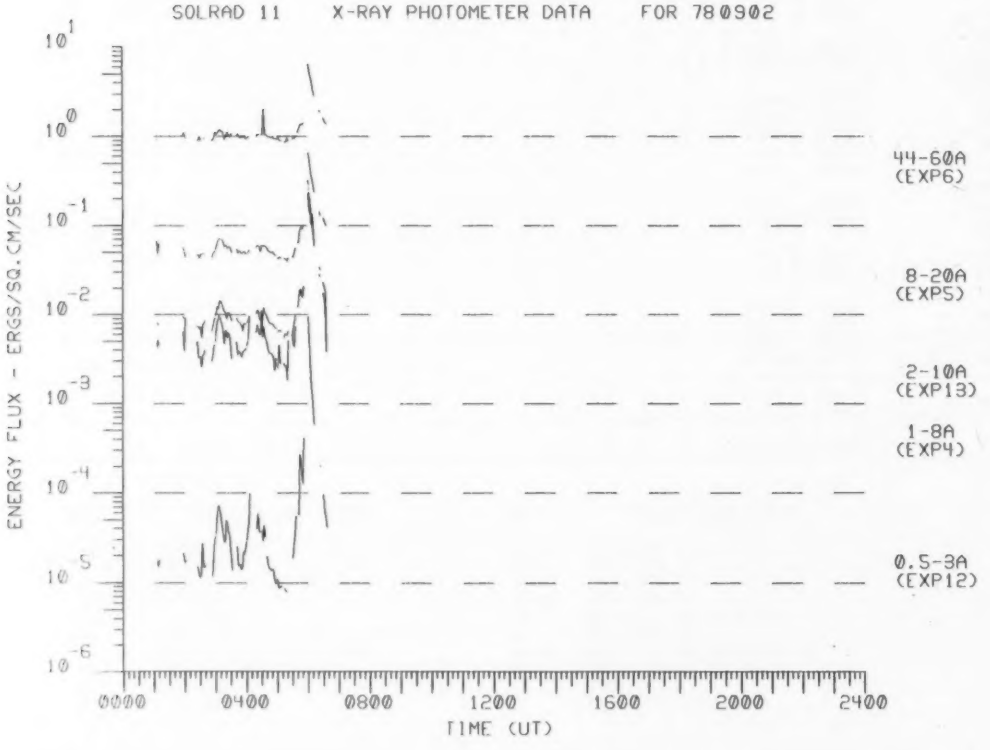
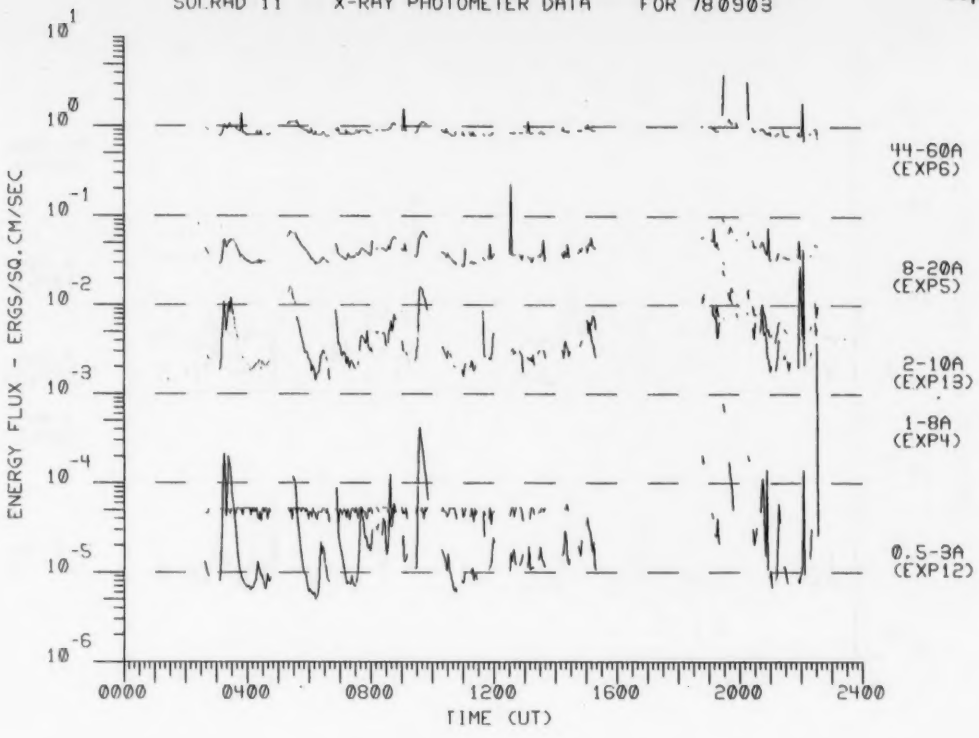
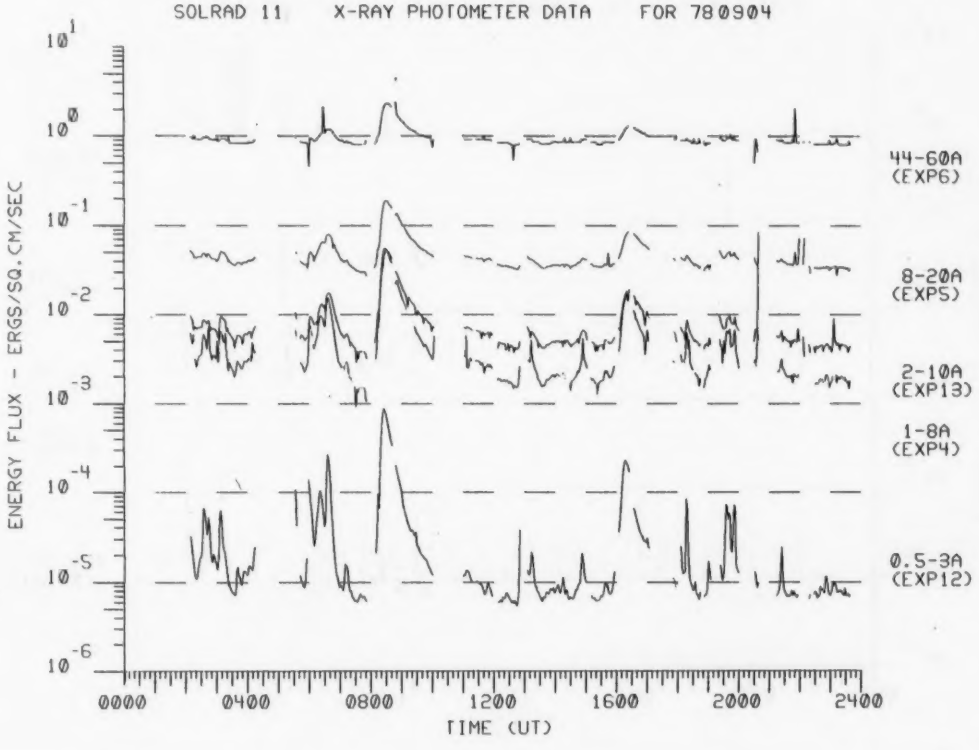
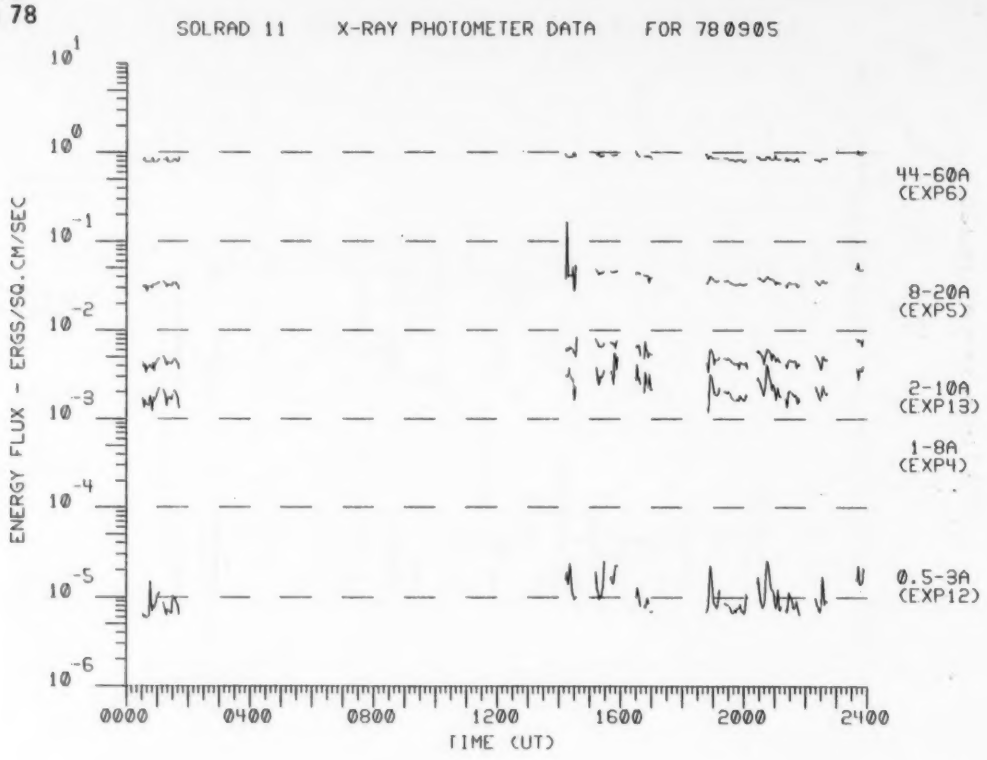
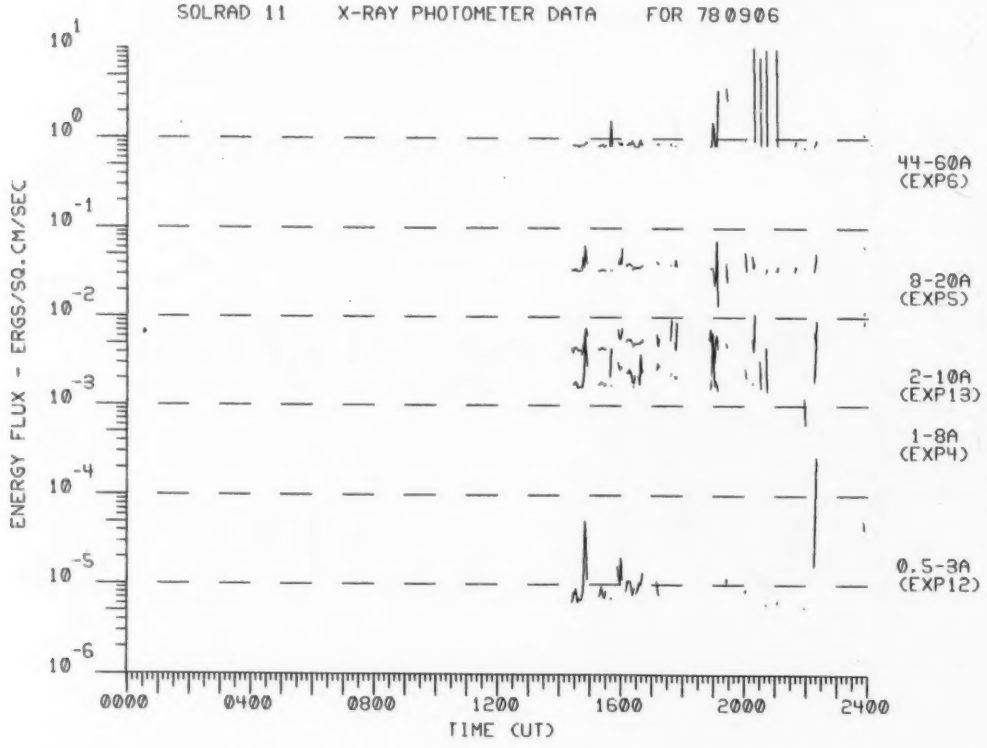
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780902
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

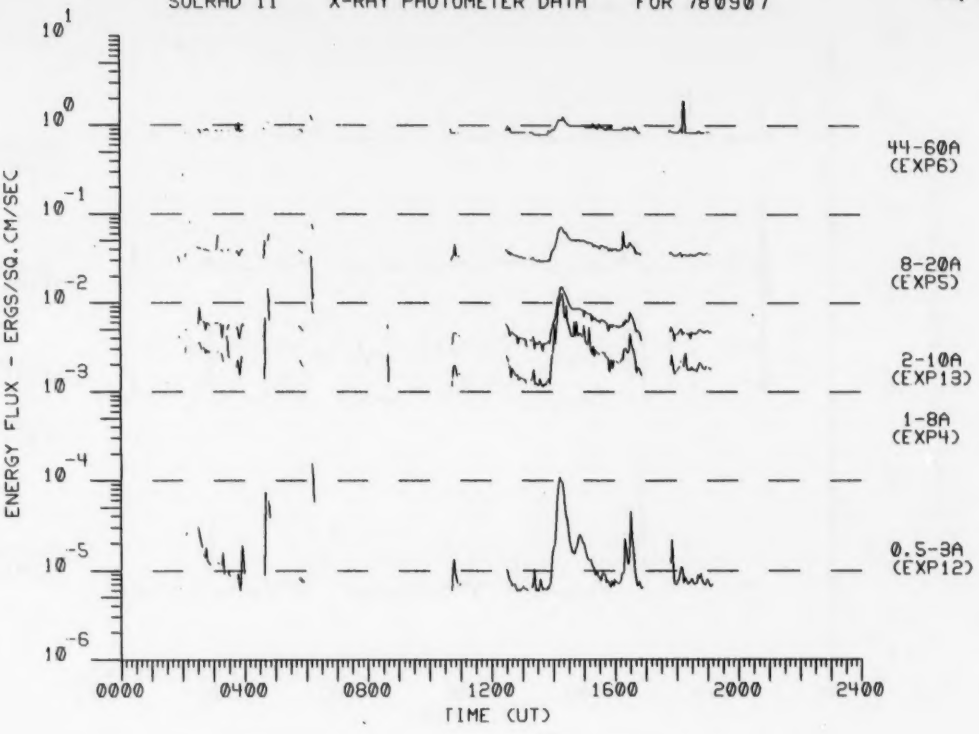

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780903
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780904
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

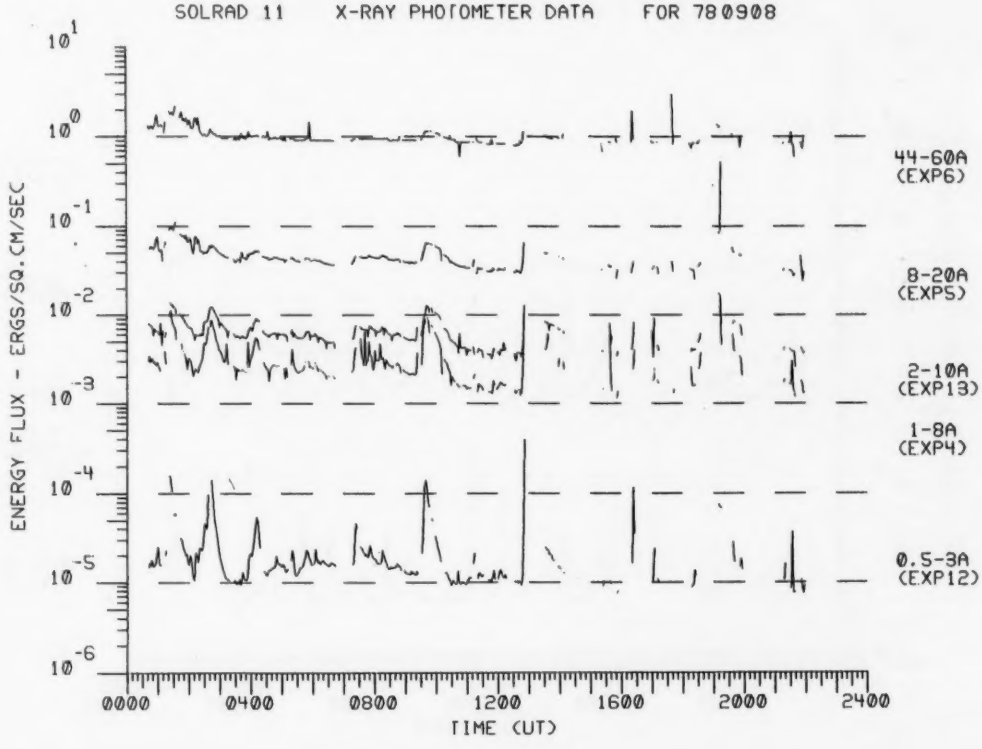

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780905
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

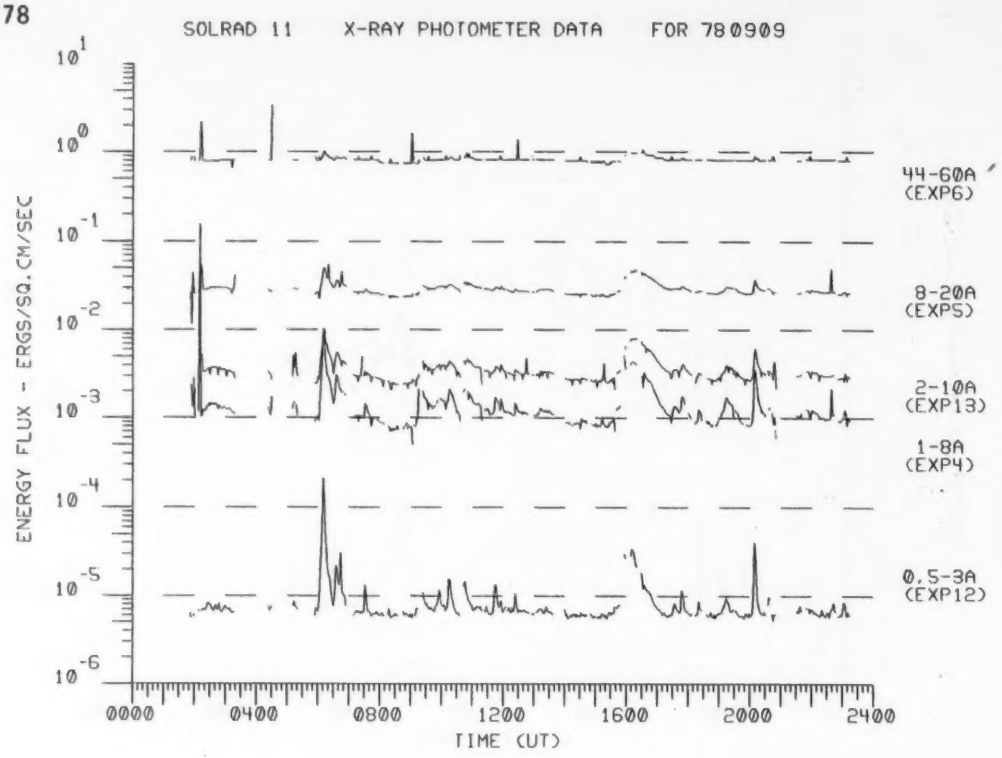

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780906
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

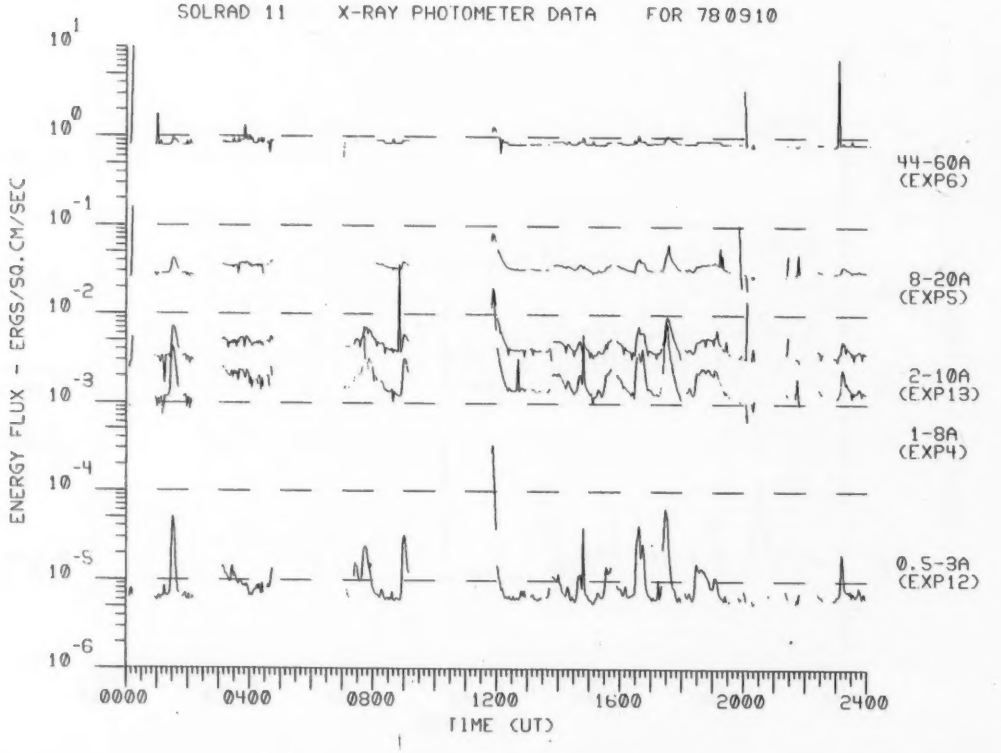
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780907



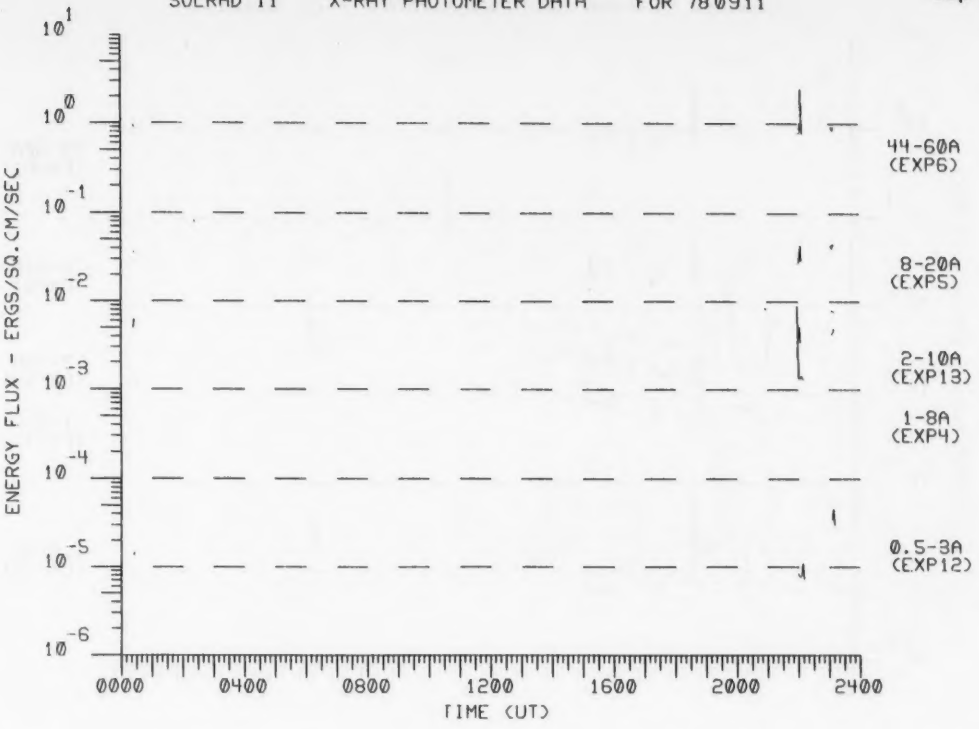
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780908



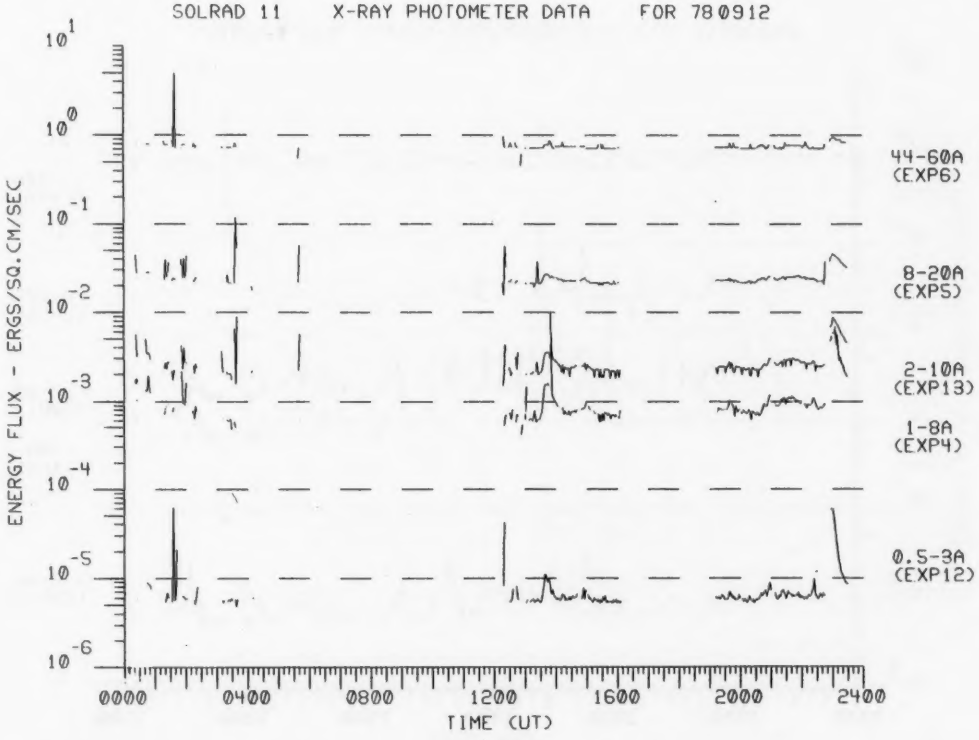

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780909
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780910
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

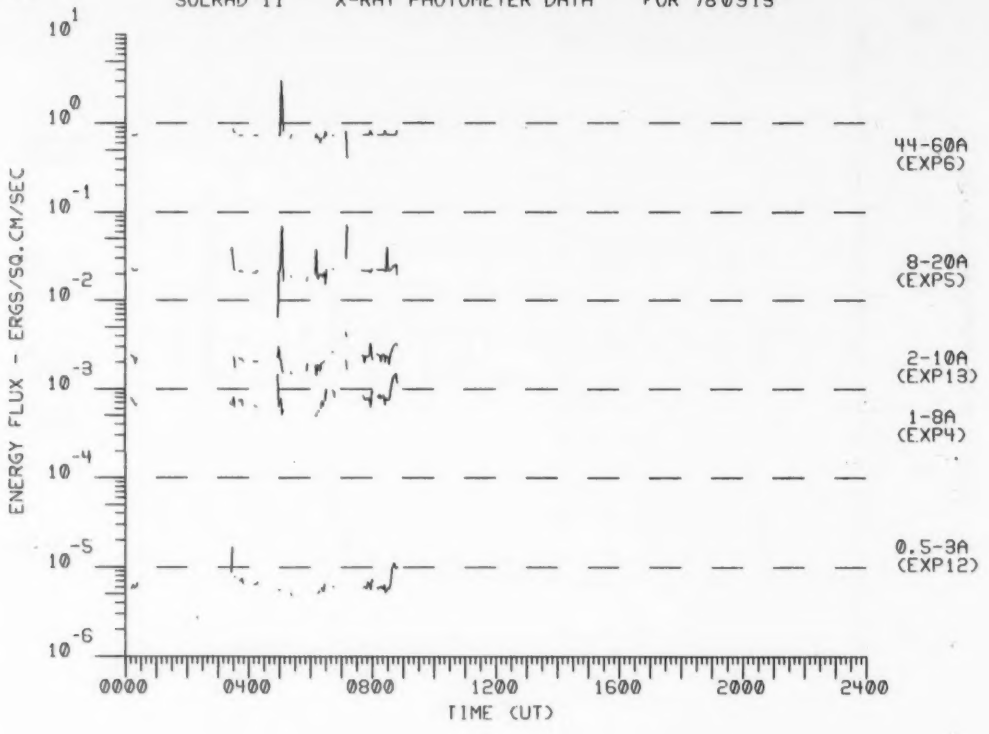
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780911



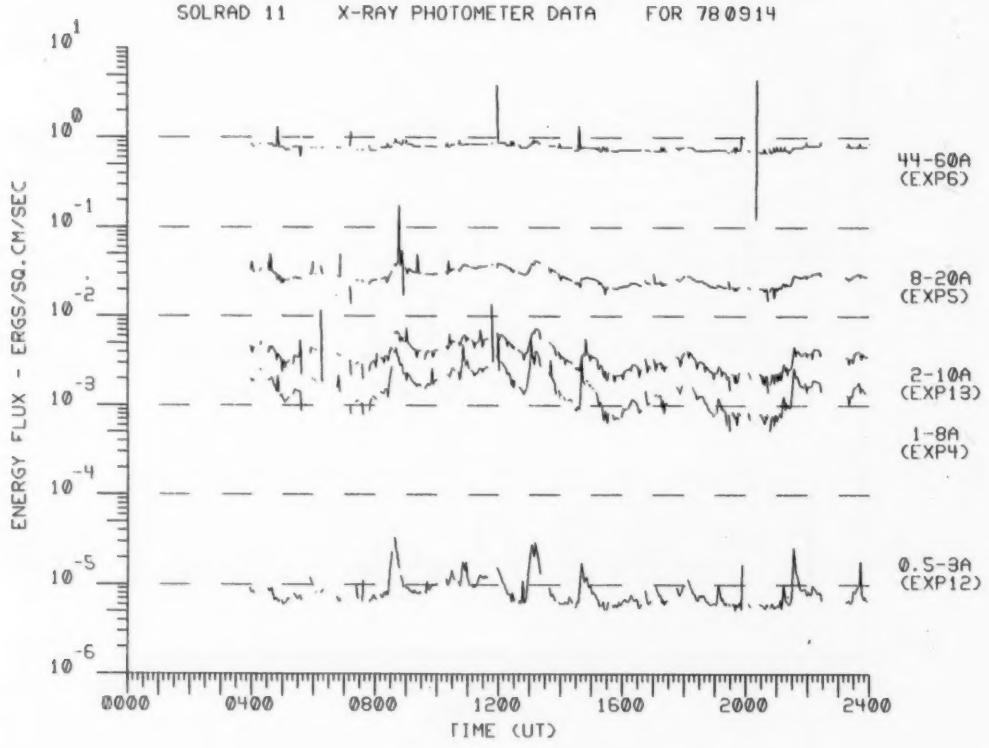
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780912

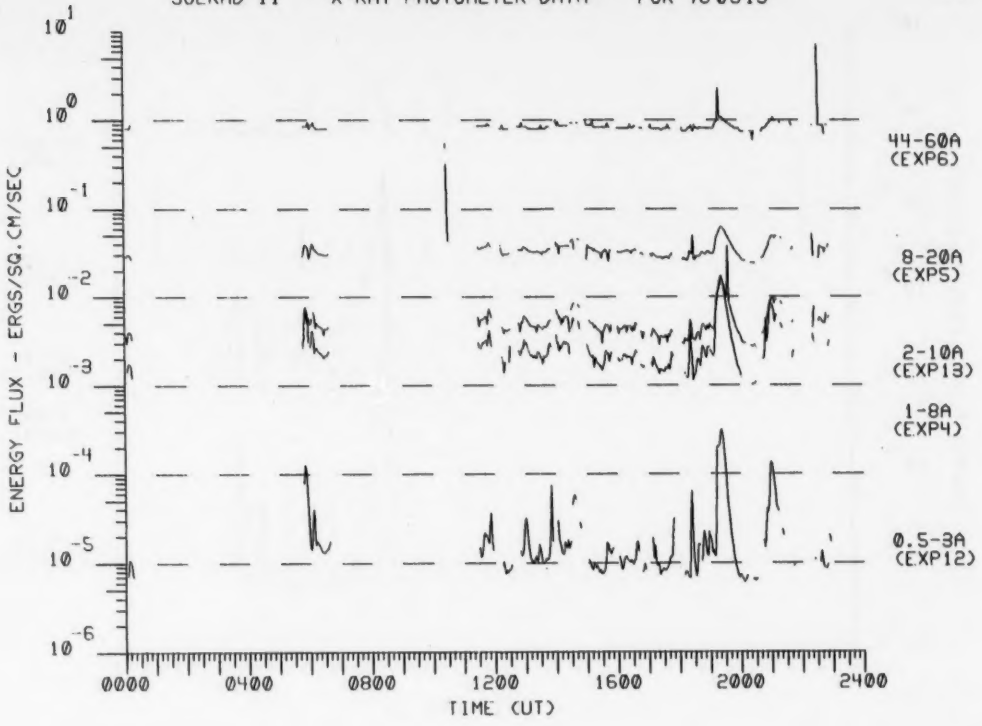


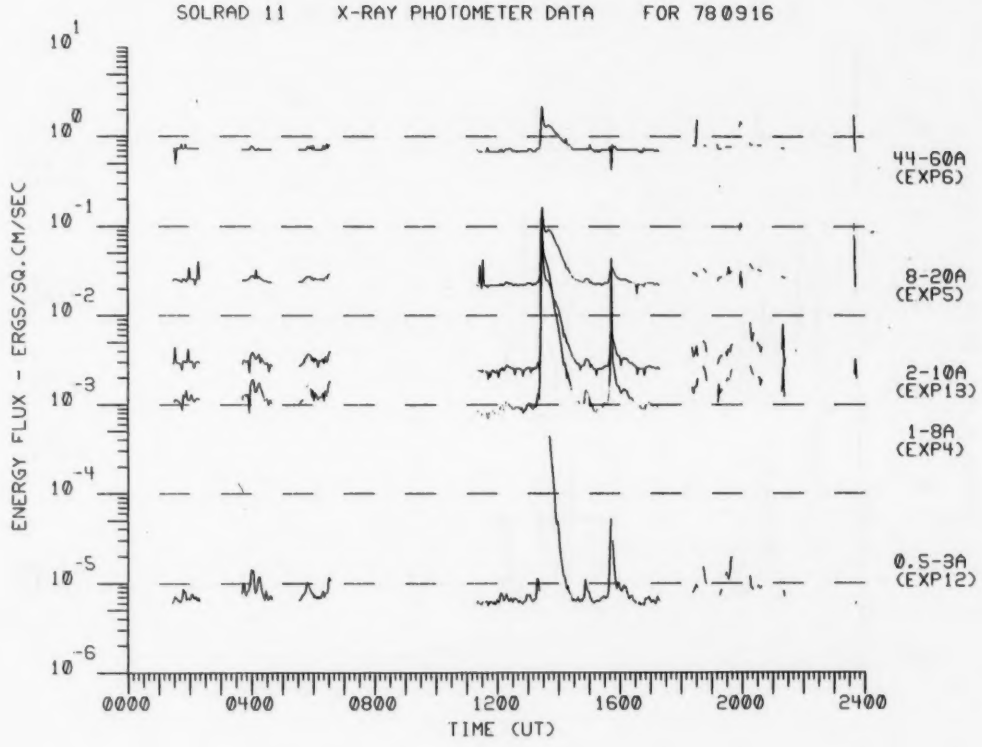
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780913



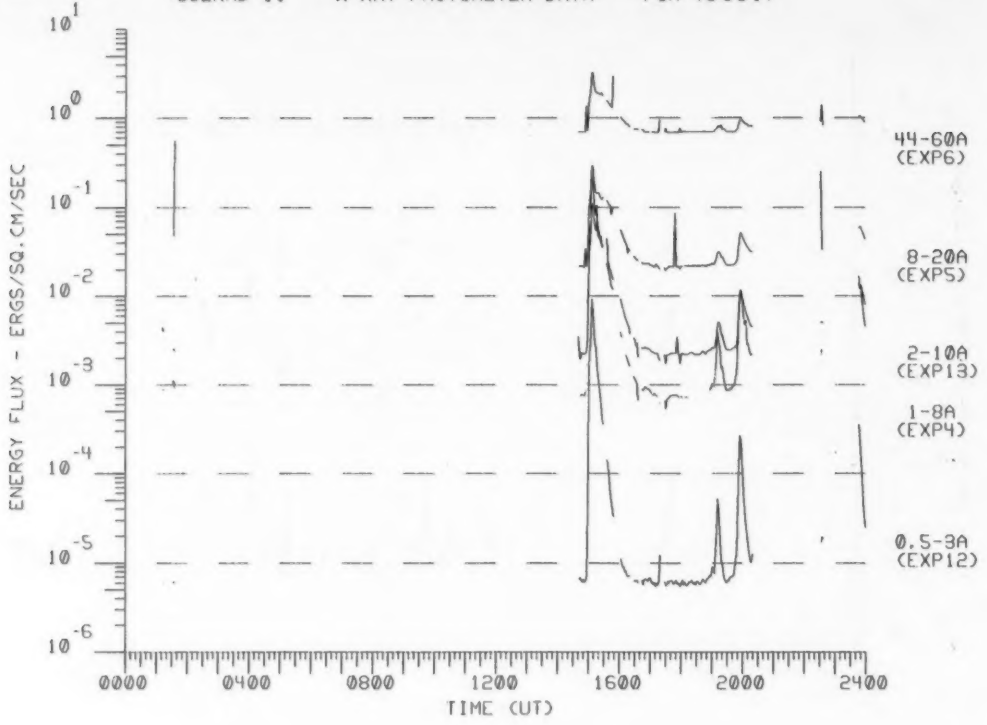
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780914



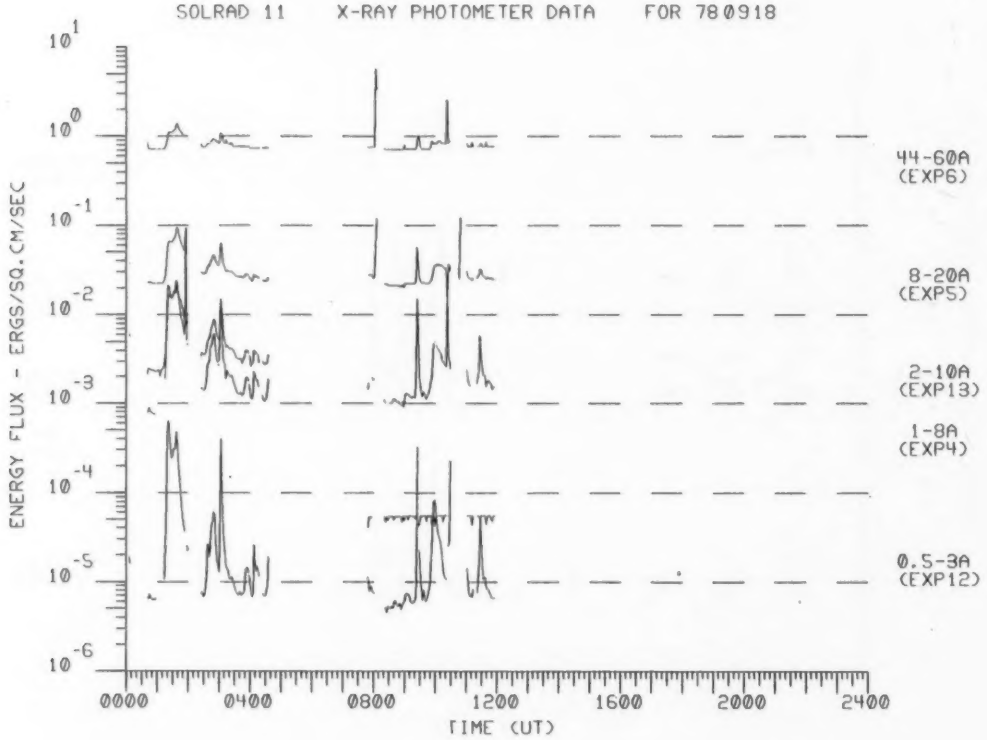

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780915
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

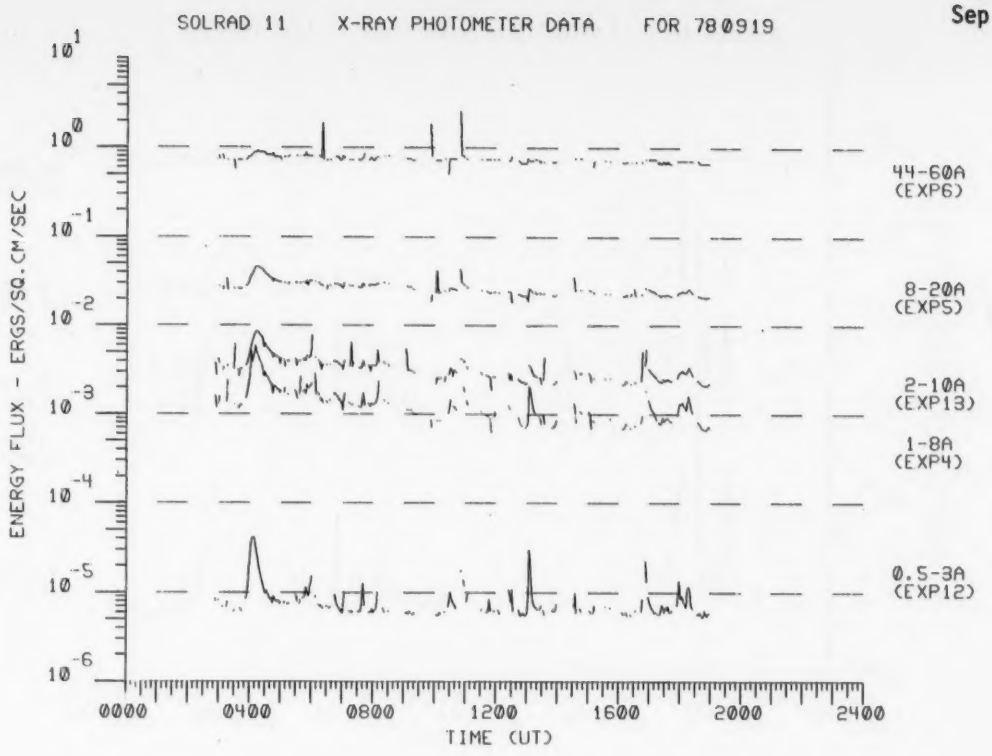

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780916
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

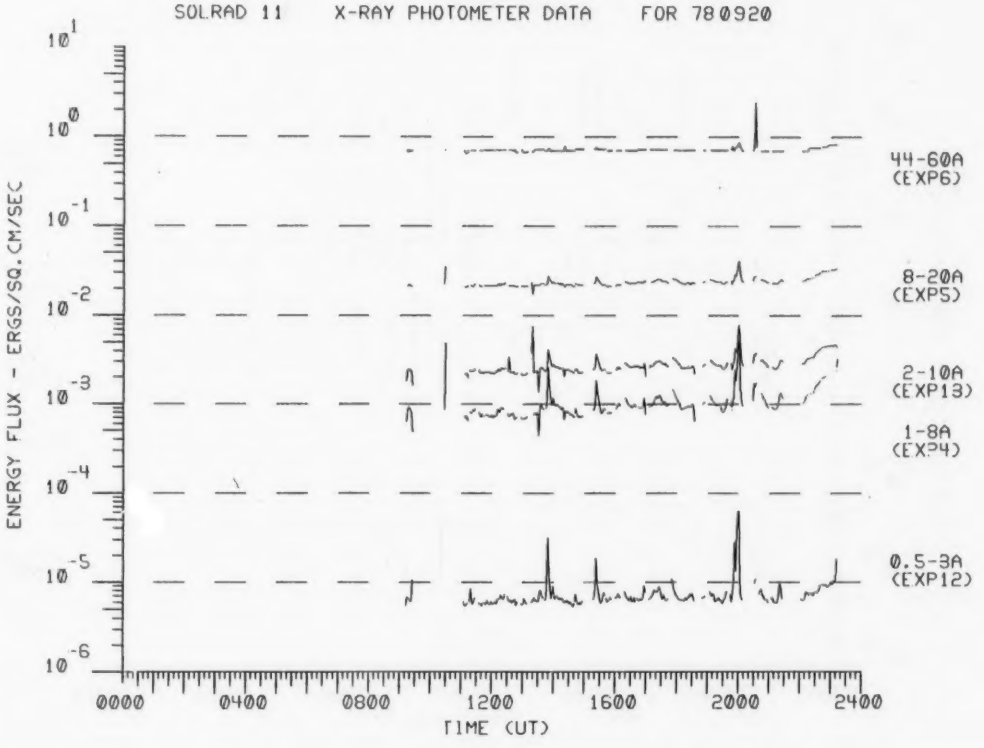
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780917

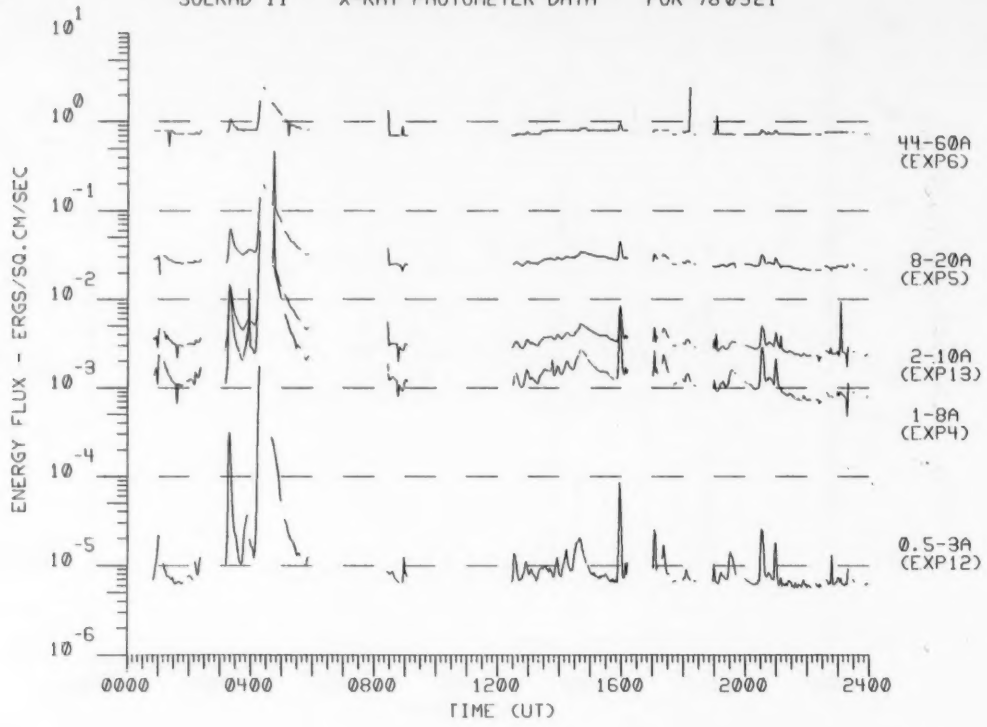


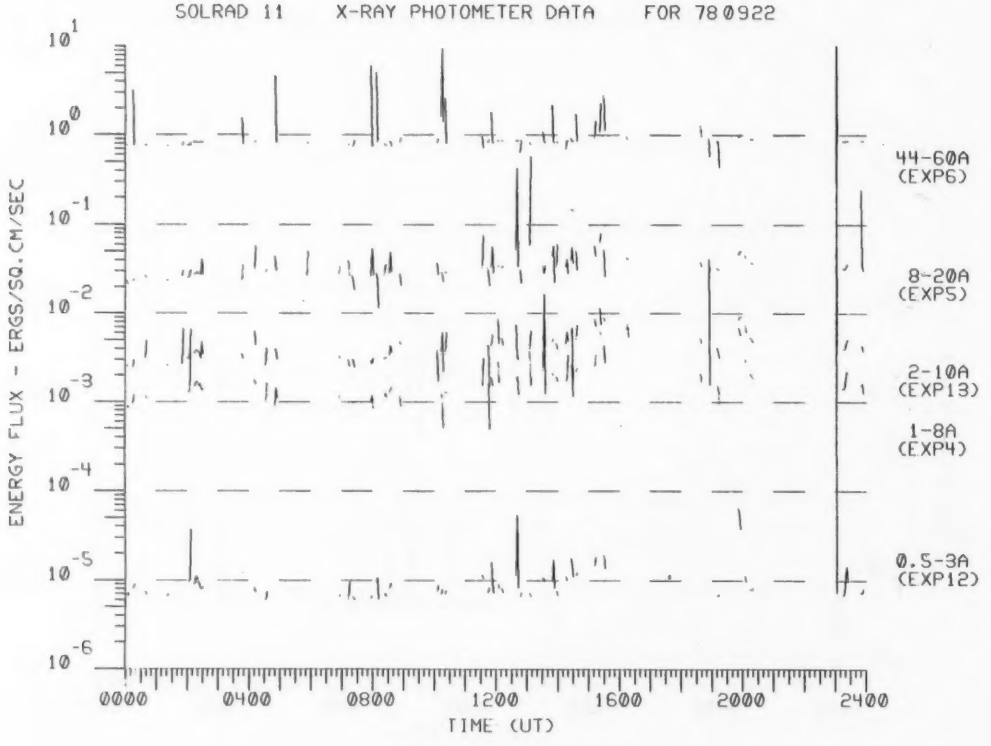
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780918

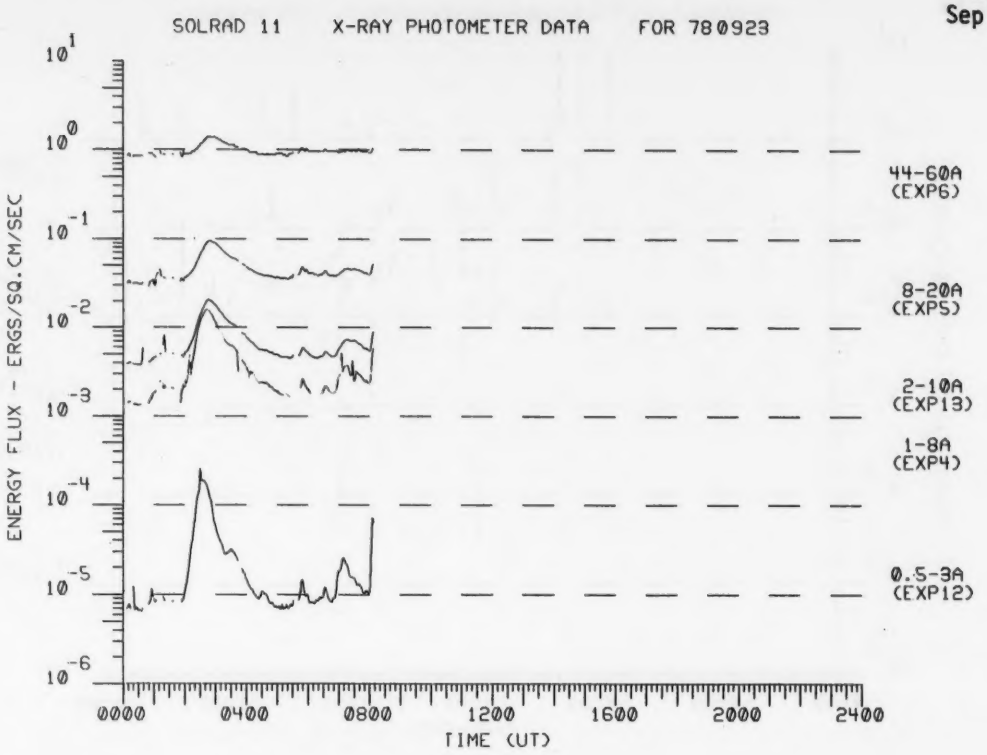


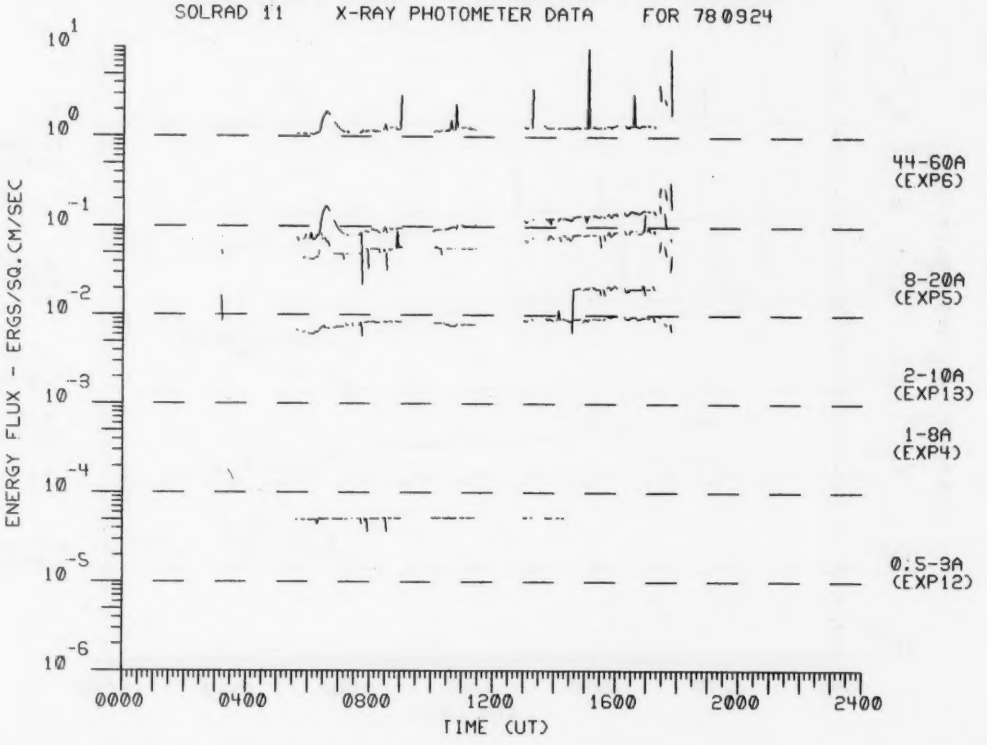

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780919
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780920
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

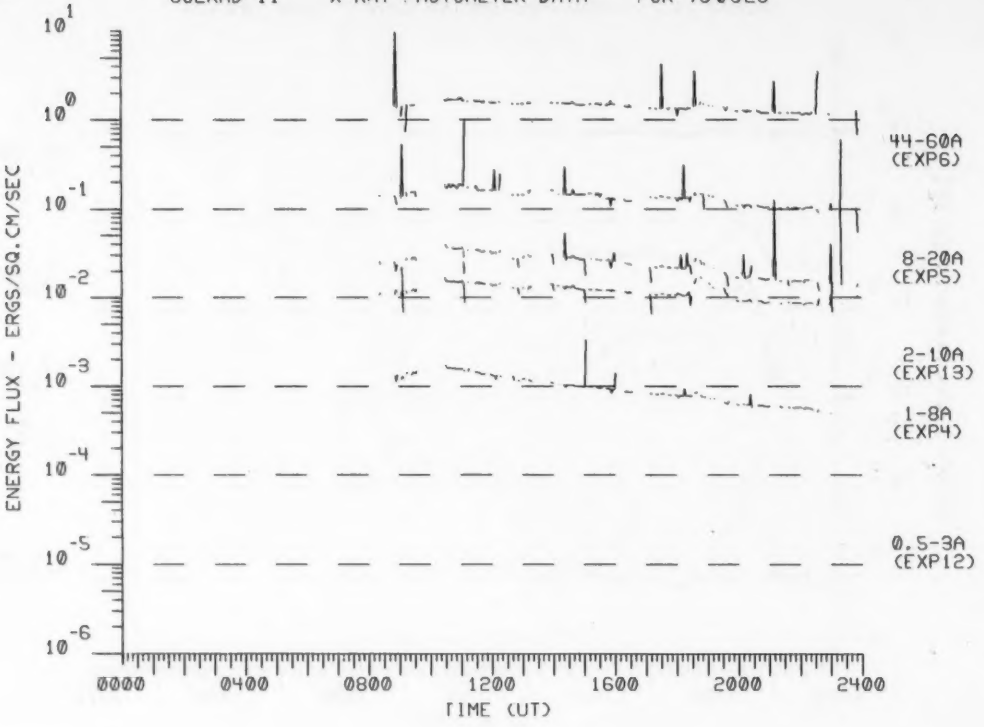

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780921
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780922
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

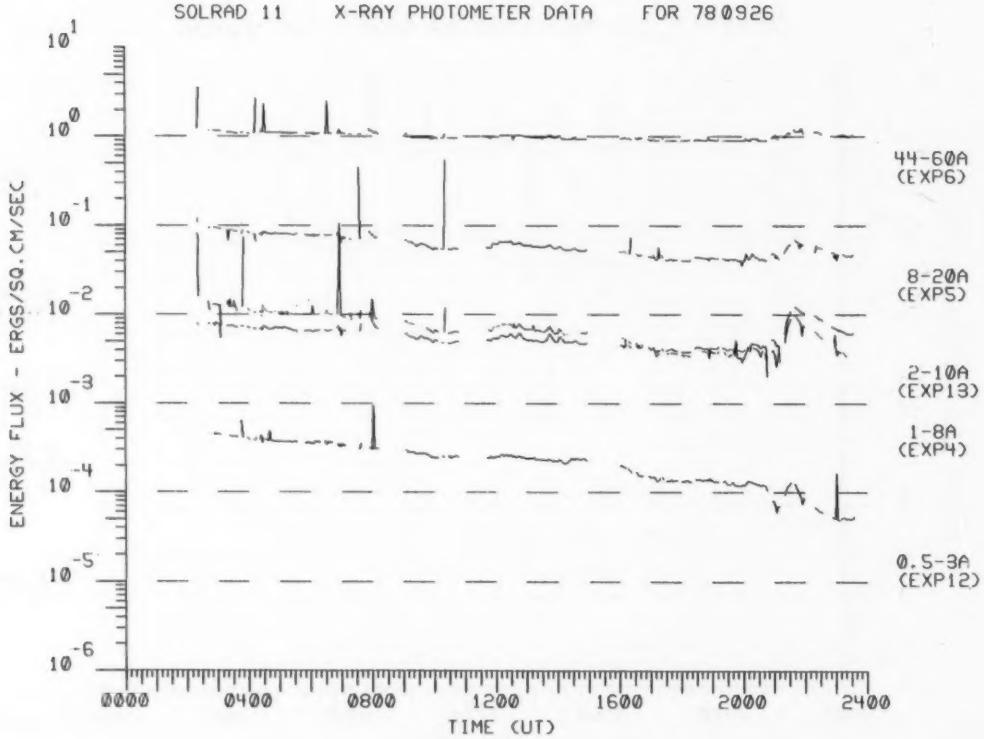

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780923
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

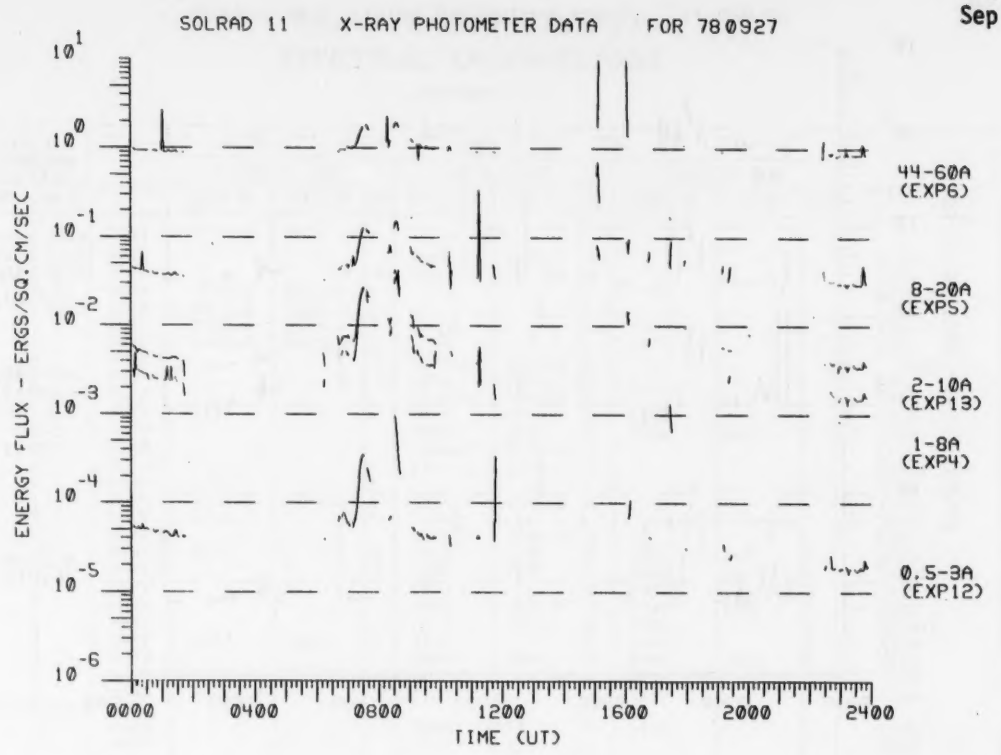

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780924
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

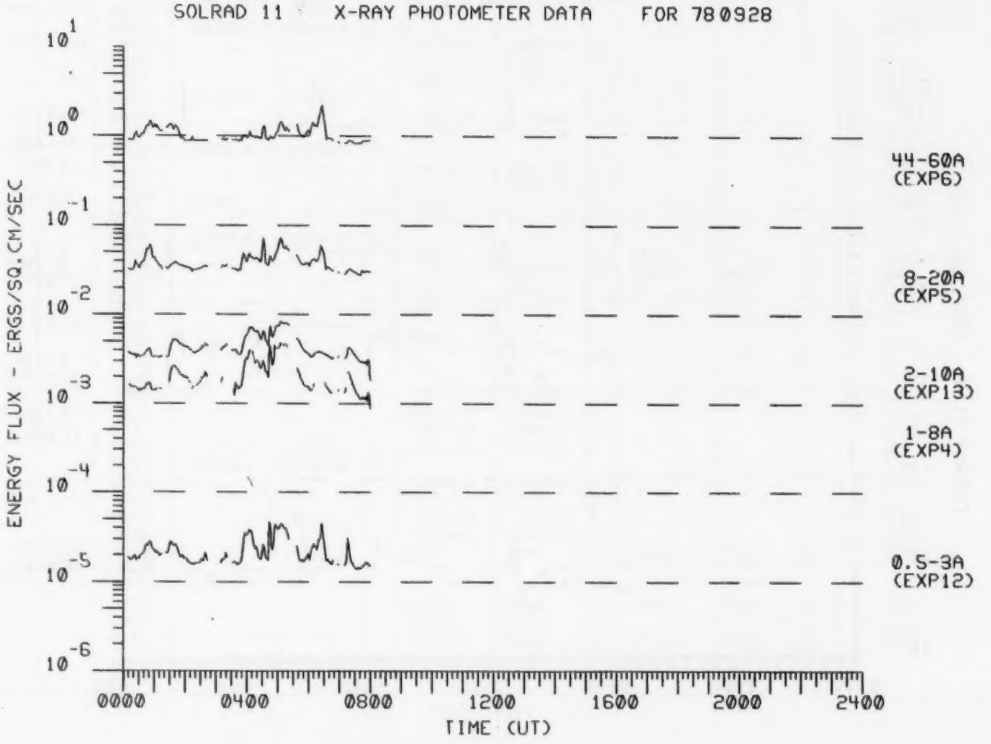
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780925

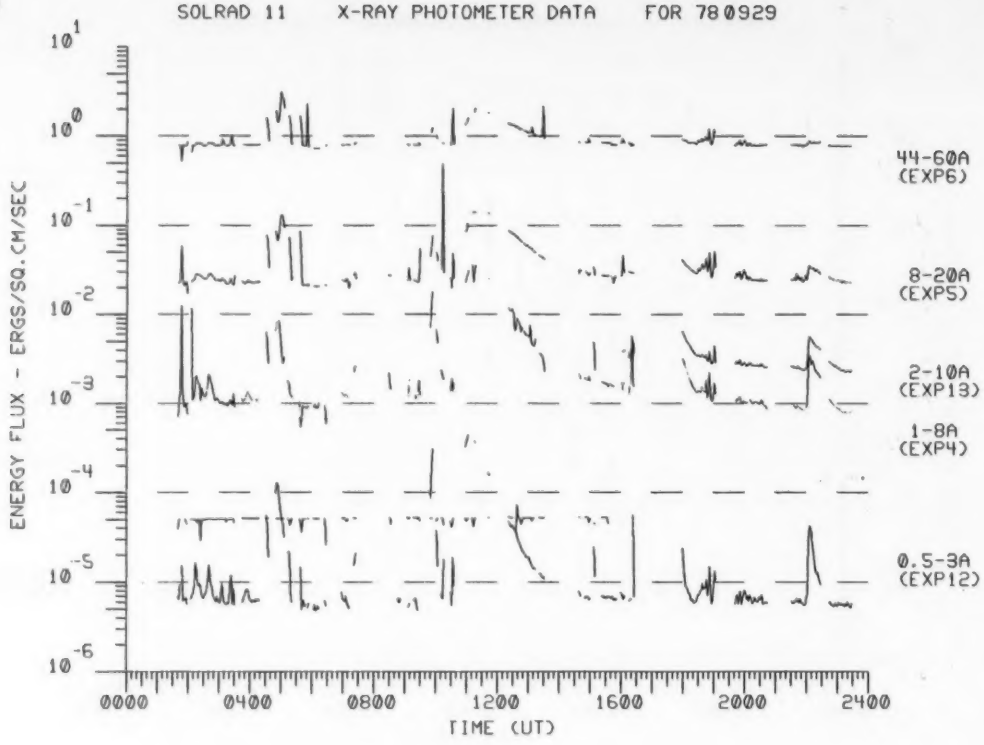


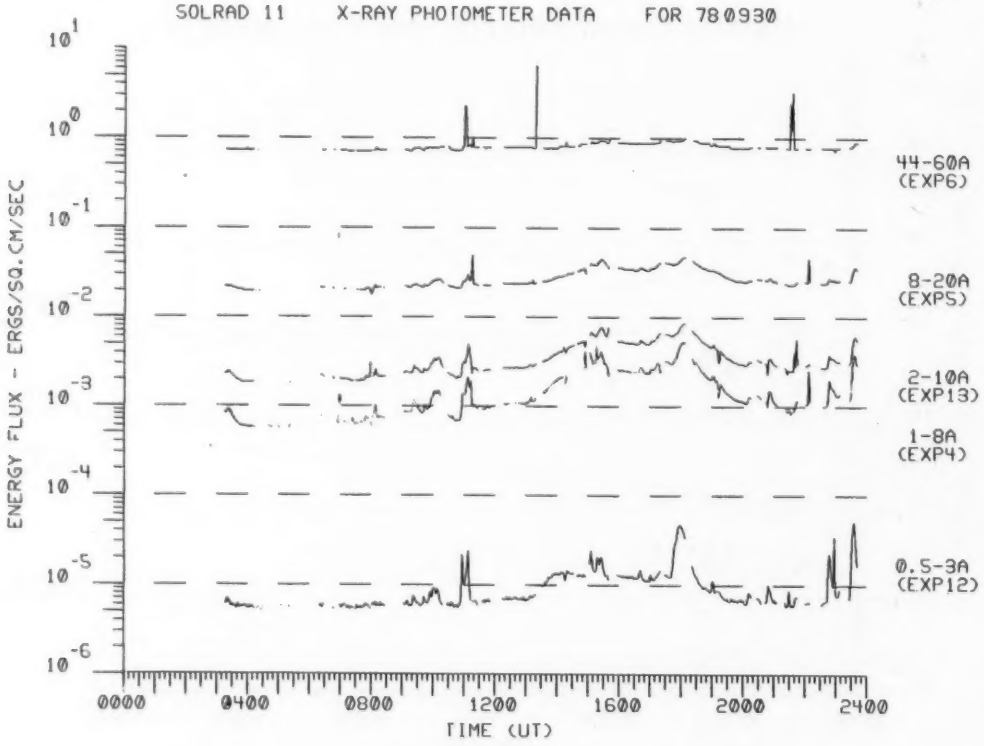
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780926




SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780927
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780928
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780929
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780930
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	1000	MANI										
	0516	1730	WEIS				0612.0	1643.0	1				IIIN
	0533	1107	OURN				0622.9	0623.0	3				IIIG
			OURN	0623.8	0626.3	1							DCIM
	0728	1432	OWIN	0806.0	0806.2	1							IIIG
			OURN	0933.6	0934.2	3							IIIG
			OWIN	0933.6	0933.9	3							IIIG
			WEIS				1036.6	1043.0	2				II, HARM.
	1207	1754	OURN				1220	1620	1				IW
	1030	2000	SGMR				1237.9	1242.1	1				IIIG
	1300	2245	HARV	1438		1	1438	1440	1	1440		1	IIIG
			HARV				1554	1616	1	1554	1616	1	IIIN
			SGMR				1556.0	1556.8	1				IIIG
			OURN				1704.0	1704.2	1				IIIRS
			HARV	1731		1							IIIG
			OURN	1749.3	1749.5	1	1749.3	1749.5	1				IIIG
			HARV	1749		1							IIIG
			SGMR				1810.0	2000.00	1				CONT
			HARV	1836		1	1810	1837	2	1810	1837	2	IIIN
			HARV				1841	1857	3	1841	1857	3	IIIGG,UNCL
			HARV				1933		2	1933		2	IIIG
			HARV				1949	1952	2	1949	1952	2	IIIG
			HARV				2000	2004	2	2001		1	IIIB,I
			HARV	2013	2014	1	2013		1	2013		1	IIIG
			HARV				2025	2044	2	2025	2044	2	IIIN
			HARV				2103		2	2103		2	IIIB
			HARV				2117		2	2117		2	IIIB
	2145	2400	MANI										
			HARV				2153		2	2153		1	IIIG
			HARV				2207	2219	1				IIIN
02	0000	0956	MANI										
	0516	0652	WEIS				0518.0	1730.0	2				IIIS
	0530	1440	OURN	0530 E	1750	3	0530 E	1750	3				I,C,DC,N
			OURN	0603.2	0623.7	2							DCIM
	1500	1750	OURN				0803.4	0803.6	1				G
			OURN				0906.2	0906.7	2				IIIG
	0723	1730	WEIS				0906.2	0911.0	3				IIIGG
			OURN	0932.6	0932.7	2							IIIRS
	1030	2000	SGMR				1144.0	1150.0	1				IV
			SGMR				1150.0	1320.0	1				CONT
			OURN	1252.9	1553.8	2							IIIGG
			WEIS				1410.8	1411.2	2				IIIG
			WEIS				1450.7	1451.3	2				IIIG
	1300	2245	HARV	1451		1	1451		2				IIIG
			WEIS				1501.0	1601.3	2				IIIRS
			OURN	1528.7	1528.9	1							IIIG
			HARV				1534		1	1534		1	IIIG
			HARV				1543	1637	3	1543	1637	3	IIIS
			SGMR				1544.7	1606.7	2				IIIS
			HARV				1653	1708	1				IN,W
	2147	2400	MANI										
			HARV				2209		2				IIIG
03	0000	0956	MANI										
	0530	1440	OURN				0530 E	1748 D					I,C,DC
	0615	1450	WEIS				0718.0	1720.0	2				IIIN
			WEIS				0805.0	1652.0	2				IN,DC
			OURN	0813.2	0813.2	3	0813.2	0813.2	3				III
			OURN	0956.5	0956.6	2							IIIU
	1030	2000	SGMR				1145.0	2000.00	2				CONT
	1300	2250	HARV				1300	1600	1				IN
			SGMR				1306.6	1307.3	3				IIIG
			SGMR				1446.0	1448.7	3				IIIG
			HARV				1446	1448	3	1446	1448	3	IIIG
	1500	1748	OURN										
	1507	1726	WEIS										
			HARV				1545	1546	2	1545	1546	2	IIIG
			HARV				1600	1700	2				I
			HARV				1600	2142	2	1600	2142	2	IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03			HARV				1735	1738	3	1735	1738	3	IIIGG,V
			HARV	2111	2122	2	2111	2122	3	2111	2122	3	IIIGG
			HARV				2157		3	2157		2	IIIG
	2151	2400	MANI							2223.9	2224.0	1	III
			HARV				2223	2227	3	2223	2227	3	IIIGG
			MANI							2325.7	2325.9	1	III
			MANI							2328.9	2329.1	1	III
04	0000	0956	MANI							0013.6	0014.2	1	III
			MANI							0055.5	0055.6	1	III
			MANI							0139.4	0139.6	1	III
			MANI							0221.3	0221.6	1	III
			MANI							0332.9	0333.5	1	III
			MANI							0350.3	0353.2	1	IIIG
	0519	1450	WEIS				0520.0	1705.0	2				IN
	1507	1721	WEIS				0529.0	1709.0	3				IIIN
	0530	1449	DURN	0536.2	1757 D		0530 E	1757 D	3				ICDC
	1505	1757	DURN	0715.6	0716.5	2							IIIGG
			MANI							0735.4	0735.5	1	III
			DURN				0807.2	0926	3				IV, P
			DURN	0812.8	0814.3		0812.8	0814.9	2				III
			DURN				0815.9	0817.5	3				II
			WEIS				0816.0	0850.0	3				II, HARM.
			WEIS				0818.0	0843.0	3				IV
			MANI							0818.7	0821.4	1	IIIG
			MANI							0827.0	0834.7	1	IIIG
	1030	2000	SGMR				1030.0E	2000.0D	2				CONT
			DURN				1135.5	1135.7	2				IIIG
			SGMR				1256.8	1258.3	3				V
	1300	2245	HARV							1300	2245	1	I
			HARV				1334	1515	1	1432	1515		IIIN
			HARV				1413		2				IIIG
			DURN				1435.5	1447					IV
			HARV				1515	1559	2	1515	1559	2	IIIN
			HARV				1559	1629	3	1559	1629	3	IIIS
			HARV				1630	2202	2	1630	2202	2	IIIN
			HARV				2054	2102	3	2054	2102	3	IIIG
			HARV	2116	2117	1	2116	2117	3	2116	2117	3	IIIG
	2145	2400	MANI										
05	0000	0955	MANI							0124.4	0124.6	1	III
			MANI							0400.2	0400.7	1	III
			MANI							0416.1	0421.7	1	IIIG
			MANI							0430.9	0431.6	1	III
	0520	1104	WEIS				0522.0	1710.0	2				IIIS
	1110	1722	WEIS				0522.0	1714.0	2				IDC,CONT
	0540	1506	DURN	0540 E			0540 E		3				IC,DC
	1030	2000	SGMR				1200.0	2000.0D	2				CONT
	1300	2245	HARV				1300	2245	2				I
			HARV				1447	2245	2	1447	2245	2	IIIN
			WEIS				1556.8	1557.7	3				IIIGG
	1520	1701	DURN	1556.9	1557.6		1556.9	1557.6	3				IIIG
			SGMR				1557.0	1557.9	3				V
			HARV	1557	1558	3	1557	1558	3	1557	1558	3	IIIG,V
			HARV				1745	1747	3	1745	1747	3	IIIG
			HARV	1751		2	1751		3	1751		3	IIIG,V
			SGMR				1926.4	1927.3	3				V
			HARV				1926	1927	3	1926	1927	3	IIIG,V
			HARV				1943		3	1943		3	IIIG
			HARV	1951		1	1951	1952	2	1951	1952	2	IIIG
			HARV	2126		2	2126		2				IIIB
	2148	2400	MANI							2234.0	2242.9	1	IIIG
06			WEIS				0525.0	1417.0	2				IN,DC
	0521	1719	WEIS				0536.0	1719.0	2				IIIN
	0000	0955	MANI							0545.3	0549.0	1	IIIG
			MANI							0554.3	0554.5	1	III
			WEIS				0649.3	0649.8	2				IIIG
			WEIS				0653.3	0653.7	2				IIIG
	0747	0843	DWIN										

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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
06			WEIS	1038.6	1038.9	2							IIIG
	1300	2250	HARV				1300	1605	1				IN
	1030	2000	SGMR				1329.8	1330.1	2				V
	1348	1530	DURN				1348 E	1530 D	3				IDC,CC
			SGMR				1402.7	2000.0D	2				CONT
			HARV				1439	1625	1	1439	1625	1	IIIN
			SGMR				1443.3	1443.7	2				V
			HARV				1605	1815	2				I
			HARV				1625	1814	2	1625	1814	2	IIIN
			HARV	1726	1727	2	1725	1753	3	1725	1753	3	IIIGG
			HARV	1759	1800	2	1758	1800	3	1758	1800	3	IIIGG
			HARV				1815	2240	2	1815	2240	2	IIIN
			HARV				1815	2250	1				IN
			HARV				1923	1930	3	1923	1930	3	IIIGG
	2145	2400	MANI										
07	0000	0940	MANI							0549.5-	0550.5	1	III
	0710	0915	WEIS				0721.5	1654.0	2				IIIN
	0932	1718	WEIS	1206.1	1206.5	2							IIIG,RS
	1030	2000	SGMR				1206.3	1207.7	2				V
			WEIS				1220.9	1221.7	2				IIIG
			SGMR				1235.1	2000.0D	2				IIIS
	1300	2245	HARV				1301	2144	2	1404	2144	2	IIIN
			WEIS				1316.7	1323.5	3				IIIG
			HARV	1321	1323	2	1321	1323	2				IIIG
			HARV				1334	1335	2				IIIG
			HARV	1438		1	1438		1				IIIG
			HARV				1529	1530	1	1529	1530	2	IIIG
			HARV				1617	1618	2	1617	1618	2	IIIG
	1611	1740	DURN				1629.7	1629.8	2				IIIG
			HARV				1649	1654	3	1649	1656	3	IIIGG
			HARV				1746		3	1746		3	IIIG,V
			HARV				1806	1810	3	1806	1809	3	IIIG
			HARV				2140	2141	2	2140	2141	3	IIIG
			HARV	2229		2	2229		2				IIIG
	2148	2400	MANI							2337.0	2354.5	2	IV
08	0000	0950	MANI							0358.9	0359.1	1	III
			MANI							0453.1	0453.3	1	III
	0526	1125	DURN	0526 E	1738 D	2	0526 E	1738 D	3				IDC,C
	0524	1716	WEIS				0528.0	1649.0	1				IN,DC
			WEIS				0640.0	1616.0	2				III
			DURN				0830.5	0830.6	2				III
			DURN				0901.7	0902.0	2				IIIGG
	1030	2000	SGMR				1145.8	2000.0D	1				CONT
	1300	2245	HARV				1300	2235	1				IN
			HARV				1323		2				IIIB
	1249	1738	DURN	1515.7	1515.8	2	1515.7	1515.8	3				IIIG
			HARV				1617		1				IIIG
			HARV				1737	1908	1	1737	1908	1	IIIN,W
			HARV				1836	1847	3	1836	1847	3	IIIGG
			SGMR				1838.0	1843.0	2				IIIG
	2145	2400	MANI										
09	0000	0950	MANI										
	0525	0621	WEIS										
	0526	1523	DURN				0526 E	1415	1				I,C,DC,N
	0649	1714	WEIS				0755.0	1509.0	1				IIIN
	1030	2000	SGMR										
			WEIS				1243.7	1243.9	1				IIIB
	1300	2245	HARV				1318	1330	1				IIIG,W
			WEIS				1536.4	1536.6	1				IIIG
	1539	1746	DURN										
	2145	2400	MANI										
10	0000	0949	MANI										
	0525	1246	DURN										
	0526	1509	WEIS				0704.7	0705.3	1				IIIG
			WEIS				0905.6	0905.7	1				IIIG
			WEIS				0930.9	0931.2	1				IIIG

SOLAR RADIO EMISSION
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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
10	1030	2000	SGMR										
			WEIS				1132.2	1132.3	2				IIIG
			WEIS				1323.5	1323.6	2				IIIB
			WEIS				1358.4	1358.5	2				IIIG
	1525	1712	WEIS										
	1300	2245	HARV				1658		1	1658		2	IIIB
			HARV				1719		1	1719		1	IIIG
	1323	1733	DURN				1729.5	1733.2D	3				IIIGG
			HARV	2022		2	2022	2023	2				IIIG
	2148	2400	MANI										
11	0000	0948	MANI										
	0525	1733	DURN										
	0521	1710	WEIS				1703.6	1705.2	2				IIIG
	1300	2245	HARV				1703	1705	2	1703	1705	2	IIIGG
	1030	2000	SGMR				1705.0	1705.4	1				V
	2146	2400	MANI										
12	0000	0948	MANI										
	0525	1732	DURN										
	0529	1241	WEIS				1022.8	1022.9	1				IIIB
	1030	2000	SGMR										
			WEIS				1142.5	1142.7	2				IIIG
			WEIS				1204.2	1204.3	1				IIIG
	1300	2245	HARV										
	1246	1708	WEIS				1431.4	1431.5	1				IIIB
			WEIS				1511.0	1511.1	1				IIIB
			WEIS				1559.0	1600.4	2				IIIG
	2142	2400	MANI										
13	0000	0945	MANI										
	0525	1731	DURN										
	0529	1706	WEIS				0916.8	0917.2	1				IIIG
	1030	2000	SGMR										
	1300	2245	HARV										
	2145	2400	MANI										
14	0000	0256	MANI										
	0304	0950	MANI										
	0532	0923	WEIS										
	1030	2000	SGMR										
	1003	1704	WEIS				1342.4	1342.9	2				IIIG
	0526	1728	DURN	1342.4	1342.6	1	1342.4	1349.3	2				IIIG
	1300	2245	HARV	1342	1343	2	1342	1343	1				IIIG
			WEIS				1346.9	1347.0	1				IIIG
			HARV				1349		1				IIIG
			WEIS				1359.1	1359.9	2				IIIG
			WEIS				1408.3	1409.1	1				IIIG
			WEIS				1447.8	1447.9	1				IIIB
			HARV				1449		1				IIIG,W
			HARV				1909		1				IIIB,W
	2145	2400	MANI										
15	0000	0947	MANI										
	0534	1702	WEIS				0550.7	0551.2	2				IIIG
			WEIS				0555.4	0557.0	2				IIIG
	0526	0607	DURN				0555.5	0556.7	2				IIIGG
	0645	1726	DURN										
	1030	2000	SGMR										
	1300	2245	HARV	2051		1	2051		1				IIIB,W
	2146	2400	MANI										
16	0000	0945	MANI										
	0535	0707	WEIS										
	0527	1726	DURN	1000.3	1000.4	3							IIIGG
	0748	1700	WEIS				1012.7	1012.8	1				IIIG
			WEIS				1015.6	1016.3	2				IIIG,U
			WEIS				1215.9	1216.9	2				IIIG
	1030	2000	SGMR				1216.2	1235.4	1				IIIG
			WEIS				1227.9	1229.2	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
16			DURN				1227.9	1229.1	3				IIIGG
			WEIS				1234.0	1234.2	1				IIIB
			WEIS				1308.4	1308.8	2				IIIG
			DURN				1308.5	1312.8	2				IIIGG
			WEIS				1310.4	1310.5	2				IIIG
			WEIS				1312.6	1312.8	2				IIIB
	1300	2240	HARV				1650		1	1650		1	IIIB,W
			HARV				1738		1	1738		1	IIIB,W
			SGMR				1858.2	1858.3	2				III
			HARV				1858	1900	2	1858	1900	2	IIIG
	2146	2400	MANI										
17	0000	0125	MANI										
	0136	0202	MANI										
	0250	0945	MANI										
	0529	1725	DURN										
	0537	1620	WEIS				0641.6	0642.3	1				IIIGG
			WEIS				0653.4	0654.3	2				IIIGG
			WEIS				0708.5	0708.8	2				IIIGG
			WEIS				0727.2	0727.6	2				IIIB
			WEIS				0732.5	0733.4	2				IIIG
			WEIS				0734.5	0739.2	2				IIIG
			WEIS				1029.0	1030.8	1				IIIG
	1030	2000	SGMR										
			WEIS				1229.4	1230.0	2				IIIG
			WEIS				1254.0	1254.2	2				UHARM.
	1428	2240	HARV										
			WEIS				1619.2	1619.4	2				IIIB
	1654	1659	WEIS										
	2143	2400	MANI										
18	0000	0942	MANI							0157.8	0158.2	1	III
	0530	1724	DURN				0530 E	1130	1				I,W,N
			DURN	0702.2	0703.5	2							DCIM
	0538	1659	WEIS				0702.3	0702.8	2				IIIG
			DURN	0702.4	0702.8	3	0702.4	0702.8	3				IIIG
			WEIS				0716.2	0716.4	2				IIIG
			WEIS				0836.4	0836.7	1				IIIB
			WEIS				0853.9	0854.1	1				IIIB
			DURN	0926.0	0927.3	3	0926.0	0927.3	3				IIIGG
			DURN	0926.3	0934.0	1						IV	
			WEIS				0927.2	0930.2	2				IIIG,RS
			DURN				0928.7	0929.5	3			II,	A
			WEIS				0931.9	0932.5	1				IIIG
			DURN	1045.5	1046.0	2	1045.5	1046.0	2				IIIG
			DURN	1057.6	1057.8	2	1057.6	1057.8	1				IIIG
			WEIS				1126.6	1127.0	1				IIIG
			WEIS				1211.8	1212.2	2				IIIU
			WEIS				1223.1	1223.3	1				IIIG
			WEIS				1240.1	1240.6	1				IIIG
			WEIS				1243.7	1243.8	1				IIIB
			WEIS				1311.2	1312.7	1				IIIG
	1030	2000	SGMR				1332.3	1333.5	3				V
	1328	2245	HARV				1332	1333	2				U
			WEIS				1334.5	1336.3	3				IIIG
			SGMR				1525.2	1529.0	3				IIIG
			HARV				1525	1528	2	1525	1528	2	IIIGG,V
			WEIS				1527.7	1531.7	3				IIIG
			WEIS				1535.0	1535.3	1				IIIG
			HARV				1831		2				U
			SGMR				1845.8	1849.9	3				IIIG
			HARV				1846	1852	3	1856	1852	3	IIIGG,V,U
	2150	2400	MANI										
19	0000	0945	MANI										
	0531	1459	DURN				0531 E	1459 D	2				I,W,N
	0533	1503	WEIS				1105.9	1107.1	3				IIIG
	1031	2000	SGMR				1106.3	1107.0	2				V
			WEIS				1313.8	1313.9	1				IIIB
	1510	1654	WEIS										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
19	1328	2245	HARV				1620	1640	1				IN,W
	2143	2400	MANI										
20	0000	0943	MANI										
	0644	1720	OURN										
	0540	1652	WEIS				0949.3	0949.5	1				IIIB
	1032	2000	SGMR										
			WEIS				1650.8	1651.4	1				IIIG
	1328	2245	HARV				1651		1				U
			HARV				2000		2	2000		2	IIIG
			HARV				2016	2017	3	2016	2017	3	IIIG
			HARV				2105		2	2105		2	IIIG
			HARV				2124	2127	2	2124	2127	2	IIIG
	2144	2400	MANI										
21	0000	0940	MANI							0331.4	0331.6	1	III
			MANI							0413.5	0413.81	1	III
	0533	1727	OURN				0533 E	1727 D	3				I,DC
	0542	1231	WEIS				0543.0	1632.0	2				IS,CONT
			WEIS				0728.0	1526.0	2				IIIS
	1033	2000	SGMR				1033.0E	2000.0D	2				CONT
	1317	2245	HARV				1317	1820	1				I
			SGMR				1328.1	1329.9	2				IIIG
			HARV				1328	1329	2	1328	1329		IIIG,2
	1402	1648	WEIS				1438.1	1442.3	2				IIIGG
			OURN				1438.2	1441.9	3				IIIGG
			HARV				1438	1442	3	1438	1440	2	IIIGG
			WEIS				1554.6	1558.7	3				IIIG
			OURN	1554.7	1601.5	3	1554.7	1558.1	3				IIIGG
			HARV	1555	1558	3	1555	1558	3	1555	1558	3	IIIGG,V,U
			HARV	1601	1602	3	1602	1607	3	1602	1607	3	IIIGG
			WEIS				1602.6	1603.2	2				IIIG
			WEIS				1604.7	1607.5	1				IIIG
			HARV	1710	1722	2							IIIN
			HARV				1734	1739	3	1734	1739	3	IIIG,V
			HARV				1810		1				IIIG,W
			HARV				1820	2245	1				IN,W
			HARV				1919		2	1919		2	IIIG
	2144	2400	MANI										
22	0000	0940	MANI										
	0526	1100	OURN				0526 E	1100 D	1				IW
	0542	1647	WEIS				0605.0	1519.0	1				IN
			WEIS				0620.0	1633.5	2				IIIN
	0952	1200	OWIN										
	1034	2000	SGMR				1058.1	1058.3	1				III
			WEIS				1130.4	1139.3	3				IIIGG
			SGMR				1131.7	1138.4	3				V
			SGMR				1147.6	2000.0D	2				IIIS
			WEIS				1254.8	1301.7	3				IIIGG
			SGMR				1255.0	1302.4	3				V
			WEIS				1312.7	1312.9	2				IIIG
	1317	2245	HARV				1339	1341	1				IIIB
			HARV				1355		1	1355		1	IIIG
			WEIS				1407.6	1409.4	3				IIIGG
			HARV				1408	1411	2	1408	1411	2	IIIG
			WEIS				1427.0	1435.0	1				II
			SGMR				1427.0	1438.1	2				II
	1430	1700	OWIN	1430	1500	1							IV
			HARV				1434	1436	2	1434	1436	2	IIIG
			SGMR				1438.1	2000.0D	1				CONT
			WEIS				1534.0	1536.5	3				IIIGG
			SGMR				1534.1	1536.6	3				V
			HARV				1534	1538	3	1534	1538	3	IIIGG
			HARV				1544	1653	3	1544	1653	3	IIIN
			WEIS				1616.0	1619.8	2				IIIGG
			HARV				1718	1727	3	1718	1727	3	IIIG,V
			HARV				1743	1753	2	1743	1753	2	IIIN
			SGMR				1757.7	1803.7	3				V
			HARV				1757	1818	3	1757	1818	3	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22			SGMR				1903.1	1903.3	3				III
			HARV				1903	1904	3	1903	1904	3	IIIG
			HARV				1917	2015	2	1917	2015	2	IIIN
	2145	2400	MANI										
23	0000	0938	MANI										
	0630	0730	DURN										
	0536	0620	DURN				0720.5	0720.7	3				III
	0544	1100	WEIS				0720.5	0720.7	2				IIIG
			WEIS				0725.0	1644.5	1				IN
			DWIN	0945.5	1238	3							IV
	0905	1706	DWIN	0947.5	0951.5	2							IIIGG
			WEIS				0954.0	1100.0	2				IV
			WEIS				0958.0	1028.0	2				II
			WEIS				1001.0	1024.0	2				IIIGG
			WEIS				1035.0	1610.0	2				CONT
	1035	2000	SGMR				1035.0E	1324.0	2				IV
	1317	2245	HARV				1320	1710	1				I
			SGMR				1324.0	2000.0D	1				CONT
	1331	1645	WEIS				1621.8	1623.0	2				IIIG
			HARV				1622	1623	2	1622	1623	2	IIIG
			HARV				1937	1939	2	1937	1939	2	IIIG
	2151	2400	MANI										
24	0000	0936	MANI										
	0545	1643	WEIS				0547.6	1543.3	2				IIIN
	0654	1501	DURN										
	0813	1630	DWIN										
			WEIS				1604.0	1604.6	3				IIIG
	1036	2000	SGMR				1604.0	1604.4	2				V
	1317	2340	HARV				1604		3	1604		3	IIIG
			SGMR				1723.0	1726.0	2				IIIG
			HARV				1724	1725	1	1724	1725	2	IIIGG
			HARV				1726	1740	3	1735	1740	3	II
			SGMR				1728.0	1737.0	2				II
			SGMR				1735.8	1740.5	2				IV
			SGMR				1924.7	1925.1	2				V
			HARV				1925		3	1925		3	IIIG
			HARV				2025	2030	1	2025	2030	1	IIIN
	2146	2400	MANI										
25	0000	0935	MANI										
	0546	1150	WEIS				0610.5	0726.3	1				IIIN
	0741	1207	DWIN										
	1200	1725	DURN										
	1208	1641	WEIS										
	1317	1715	HARV										
	1037	2000	SGMR				1428.5	1428.7	2				V
	1830	2220	HARV										
	2148	2400	MANI										
26	0000	0947	MANI										
	0601	1728	DURN				0601 E	1630	1				I
			DURN				0604.6	0604.9	1				III
	0548	1638	WEIS				0604.6	0604.8	1				IIIG
			WEIS				0630.5	0632.0	2				IIIG
			DURN				0700.1	0700.3	1				III
			WEIS				0717.9	0720.5	2				IIIG
			WEIS				0740.6	0740.8	2				IIIG
			WEIS				0744.3	0744.4	1				IIIG
			WEIS				0756.3	0756.4	1				IIIG
			WEIS				0902.8	0904.1	1				IIIG
			WEIS				0929.0	0931.7	1				IIIG
			WEIS				0949.8	0951.9	1				IIIG
			WEIS				0954.3	0954.5	1				IIIG
			WEIS				0958.3	0959.2	2				IIIG
			DURN				1014.7	1015.0	2				IIIG
			WEIS				1041.3	1041.7	2				IIIG
			WEIS				1101.0	1101.5	1				IIIG
			WEIS				1114.5	1114.6	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26			WEIS				1122.4	1122.8	3				IIIG
	1039	2000	SGMR				1122.8	1123.0	1				V
			WEIS				1244.4	1244.6	1				IIIG
			DURN	1307.9	1309.4	3							IIIGG
			WEIS				1311.8	1212.0	1				IIIB
			SGMR				1311.9	1312.0	1				III
			DURN				1312.3	1318.9	2				IIIGG
			WEIS				1338.8	1348.5	3				IIIG
			SGMR				1339.0	1342.2	2				IIIG
			HARV				1339	1348	1				IIIN
	1320	2340	HARV				1343	2340	1				IN
			DURN				1423.1	1423.3	1				III
			WEIS				1441.0	1441.8	1				IIIG
			WEIS				1447.4	1447.7	1				IIIG
			WEIS				1449.6	1449.8	1				IIIG
			DURN				1455.7	1457.0	1				IIIGG
			WEIS				1517.0	1519.3	2				IIIG
			HARV				1518	1523	2				IIIG
			WEIS				1522.4	1523.9	2				IIIG
			HARV				1847		1	1847		1	IIIG
			HARV	2039	2040	1	2038	2041	2				IIIG
	2146	2400	MANI										
27	0000	0150	MANI										
			WEIS				0552.0	1129.3	2				IN,DC
	0604	1448	DURN				0632	1628	3				IDC,C
	0549	1102	WEIS				0724.6	0742.0	3				II, HARM.
	0215	0933	MANI							0725.9	0741.8	1	IV
			WEIS				0800.0	1050.0	2				CONT
			WEIS				0803.0	1048.0	2				IIIN
			DURN	0803.3	0803.5	2	0803.3	0807.3	2				IIIGG
	0750	1706	DWIN	0825	0840	1							IV
	1121	1637	WEIS				1206.2	1206.3	2				DP
			WEIS				1307.7	1307.8	2				IIIB
			WEIS				1313.9	1314.0	1				IIIB
			DURN	1410.3	1448 D	3	1409.0	1448 D	3				IV, P,F
			WEIS				1411.9	1413.5	2				IIIG
			WEIS				1421.5	1422.3	3				IIIG
	1040	2000	SGMR				1421.7	1422.0	2				V
	1316	2340	HARV				1421	1422	2				IIIG
			WEIS				1435.0	1555.0	3				IV
			SGMR				1435.2	1446.3	2				IIIG
			DWIN	1435	1516	3							IV
			WEIS				1437.3	1502.0	2				IIIG
			HARV				1437	1443	2				IIIG
			SGMR				1446.3	1453.9	3				IV
			HARV				1446	1459	3	1447	1451	3	UNCL
			SGMR				1451.6	1634.0	2				CONT
			HARV				1505	1508	1				IIIG,RS
			HARV				1505	1825	2				I
	1506	1726	DURN										
			WEIS				1559.5	1559.6	1				IIIB
			HARV				1825	1920	1				IN,W
	2146	2202	MANI										
	2231	2400	MANI										
28	0000	0930	MANI							0035.0	0036.8	1	III
			MANI							0434.2	0435.1	1	III
	0551	1026	WEIS				0557.0	0932.5	1				IIIN
	0630	1654	DURN				0632.2	0633.6	2				IIIG
			WEIS				0632.3	0634.2	3				IIIG
	0652	1219	DWIN	0813.4	0813.5	2							IIIG
			WEIS				0929.7	0930.2	3				IIIG
			WEIS				0957.5	0959.2	3				IIIG,RS
			DURN	0957.5	0958.1	3	0957.5	0959.1	3				IIIGG
			DWIN	0959.2		1							IIIB
			DURN				1128.7	1128.8	2				III
	1034	1634	WEIS				1128.7	1128.9	2				IIIG
			WEIS				1356.7	1403.5	3				IIIG
	1316	1520	HARV				1358	1403	2				IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
28	1041	2000	SGMR				1359.0	1402.8	2				V
			DURN				1400.2	1401.5	2				IIIGG
	2145	2400	MANI										
	1528	2245	HARV				2203		1				IIIB
29	0000	0930	MANI										
	0553	0846	WEIS				0821.4	0822.5	3				IIIG
			WEIS				0835.3	0835.4	1				IIIG
			WEIS				0841.9	0842.2	2				IIIG
			WEIS				0844.6	0845.3	3				IIIG
	1042	2000	SGMR										
	1015	1243	WEIS				1045.0	1120.0	2				II
			WEIS				1102.3	1102.4	1				IIIB
	1330	1348	DURN										
	1632	1716	DURN										
	1316	2240	HARV				1644		2	1644		2	IIIG
	2146	2400	MANI										
30	0000	0936	MANI										
	0630	1713	DURN										
	0721	1631	WEIS				0724.0	0824.0	1				IIIN
	1043	2000	SGMR										
			WEIS				1046.5	1046.8	1				IIIG
	2145	2400	MANI										
	1316	2250	HARV				2202		2	2202		2	IIIG

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

SELECTED SOLAR EVENTS

SEPTEMBER 1978

Culgoora

UT Date 197.β September	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
1	0100.5	0102	43.25)	.7	40)		2)		
			80)	.3	50)	-	1)	IIIG,U	*
			160)	.2	60)		3)		
	0232	0233	43.25)	1.3	90)	-	2)	IIIG	*Type III activity from this region also on 2nd.
			80)	.9	)		)		
1/2	2339	0500	80)	.3	90)	-	1	IS	Complex source. Type I activity persisted until 8th, becoming LH on 3rd.
			160	.2	)				
	2339	0500	43.25)	.5	60)		2)		
			80)	.3	90)	-	2)	IIIS	
			160)	.2	90)		1)		
2/3	2330	0318	43.25)		240)		2)		Complex source
			80)	.5	240)	R	1)	IS	continued until
			160)		230)		1)		4th.
	2350	0115	43.25)	1.2	230)		2)		The type IV moves
			(A) 80)	1.2	210)	R	2)	IVM	from position A
			160)	1.0	220)		1)		to B at times
			43.25)	2.0	215)	R	2)		indicated, then
			(B) 80)	1.8	205)		2)		fades.Complex source
	0021	0425	160)	1.0	170	L	1	IS	Type I activity persisted until 9th becoming RH on 5th.
	0021	0425	43.25)	1.2	230)		2)		
			80)	1.2	210)	P	1)	IS	
			160)	1.0	220)		1)		
4	0221	0222	43.25)	.8	330)				
			80)	.5	330)	-	3	IIIG,V	*
			160)	0	0)				
5	0414	0417	43.25)	.5	320)				
			)	1.0	345)	-	3	IIIG,V	*Complex source
			80)	.5	360)				
			160)	.3	360)				

Days without Heliograph observations: ...Nil.....

* Other type III's observed from same position during the day.

UT Date 197.β September	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
6	0238	0242	43.25)	.5	)				
			)	1.0	320)	-	3	IIIGG	*
			80)	.5	)				
			160)	.5	)				
7	0002	0003	43.25)	1.3	295)		2)	IIIG	*
			80)	1.0	290)		3)		
	2329	2357	43.25	1.0	0	-		II)	Complex source,
7/8	2357	0043	43.25)				)	)	Type II source
			80)	.6	240	R	3)	IV)	moved outwards
			160)				)		from 1 to 2 RØ.
	0049	0051	43.25)		)		)		
			80)	.7	85)	-	2)	IIIG	*
			160)		)		)		
9	0451	0452	43.25)	1.3	235)	-	3)	IIIG,V	*
			80)	1.2	)		1)		
	2310	2311	80)	.9	260	-	2)	IIIG	
			160)				1)		
	2356	2357	43.25)	1.1	310	-	2)	IIIG	
			80)				)		
11/12	2300	0500	80)	1.0	310	R	1)	IS	Type I activity persisted until 13th.
			160)				)		
12	2249	2351	43.25)				2)		
			80)	.7	170	-	2)	IIIG	
			160)				1)		
17	0139	0141	80)	1.1	150		2)	IIIG	
			160)				3)		
	2332	2333	80)	.8	160	-	3)	IIIG	
			160)				2)		
18	0157	0158	43.25)	1.5	)		)		
			80)	1.3	85)	-	3)	IIIG,V	*
			160)	1.1	)		)		
	2337	2338	43.25)	1.3	)		)		
			80)	1.2	0)	-	3)	IIIG	*
			160)	1.1	)		)		

Days without Heliograph observations: ..Nil.....

* Other type III's observed from same position during the day.

SELECTED SOLAR EVENTS

SEPTEMBER 1978

Culgoora

UT Date 1978 September	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
19	0140	0142	43.25)	1.2	)		3)	.	
			80)	1.2	310)		2)	IIIGG,U	*
			160)	1.1			3)		
19/20	2250	0500	80)	.9	85)	L	1)	IS	Type I activity persisted until 23rd.
			160)				)		
	2250	0500	80)	.9	115	L	1)	IS	Type I activity persisted until 21st.
			160)						
21	0331	0332	43.25)	1.3	0)	-	3)	IIIG,V	*
			80)	1.2	)		)		
	0411	0515	43.25)	.9	65)		)	II)	Complex source structure.
			80)	.9	65)	£	3)	IV)	
			160)	.9	90)		)	)	
22/23	2300	0500	43.25)	.5	260)		)		Type I activity persisted until 24th.
			80)		)	R	1)	IS	
	0200	0340	43.25)	.5	45)		)		
			80)	.3	35)	-	2)	IIIS	
			160)	.2	35)		)		
23/24	2300	0500	80)	1.0	)	R	)		
			160)	.9	340)	R	1)	IS	
			)	1.1	)	unpol	)		
24/25	2245	0343	43.25)	1.5	)		2		Type II observed at 2122 before start of heliograph. Type IV moved outwards from position given.
			80)	1.3	235)	-	2	IV M	
			160)	1.2	)		1		
25	0120	0512	80)	.5	150)	L	2)	IS	
			160)	.7	)		1)		
	0147	0226	160	.9	110	L	1	IS	

Days without Heliograph observations: Nil

* Other type III's observed from same position.

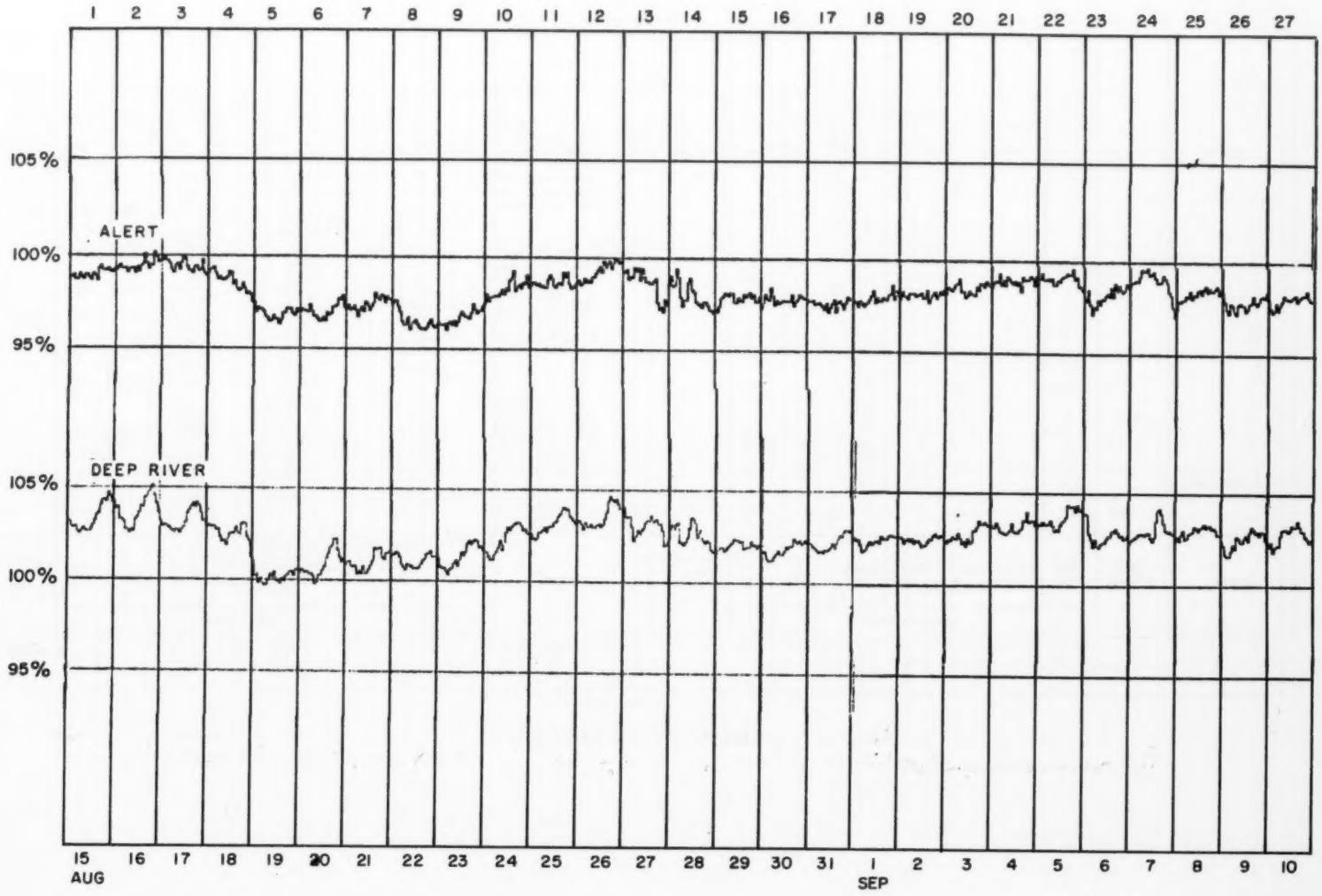
UT Date 1978 September	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
25	0351	0352	43.25	.3	150)	-	2	IIIG	
25/26	2300	0500	80)	.8	0	L	1)	IS	Type I activity persisted until 30th.
			160)				)		
	0057	0058	80)	1.0	60	-	3)	IIIG	
			160)				2)		
	0341	0342	160	.9	115	-	3	IIIGG	
28	0434	0437	43.25)	.9	)				
			80)	.4	350)	-	3	IIIGG,V	*
			160)	.3	)				
29	0149	0150	43.25)		80)		3)		
			80)	1.0	85)	-	2)	IIIG	*
			160)		90)		1)		
	2339	2340	80	1.0	150	-	2	IIIG,W	

Days without Heliograph observations: Nil

* Other type III's observed from same position during the day.

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1983 (August-September 1978)



COSMIC RAY INDICES
(Neutron Monitors)

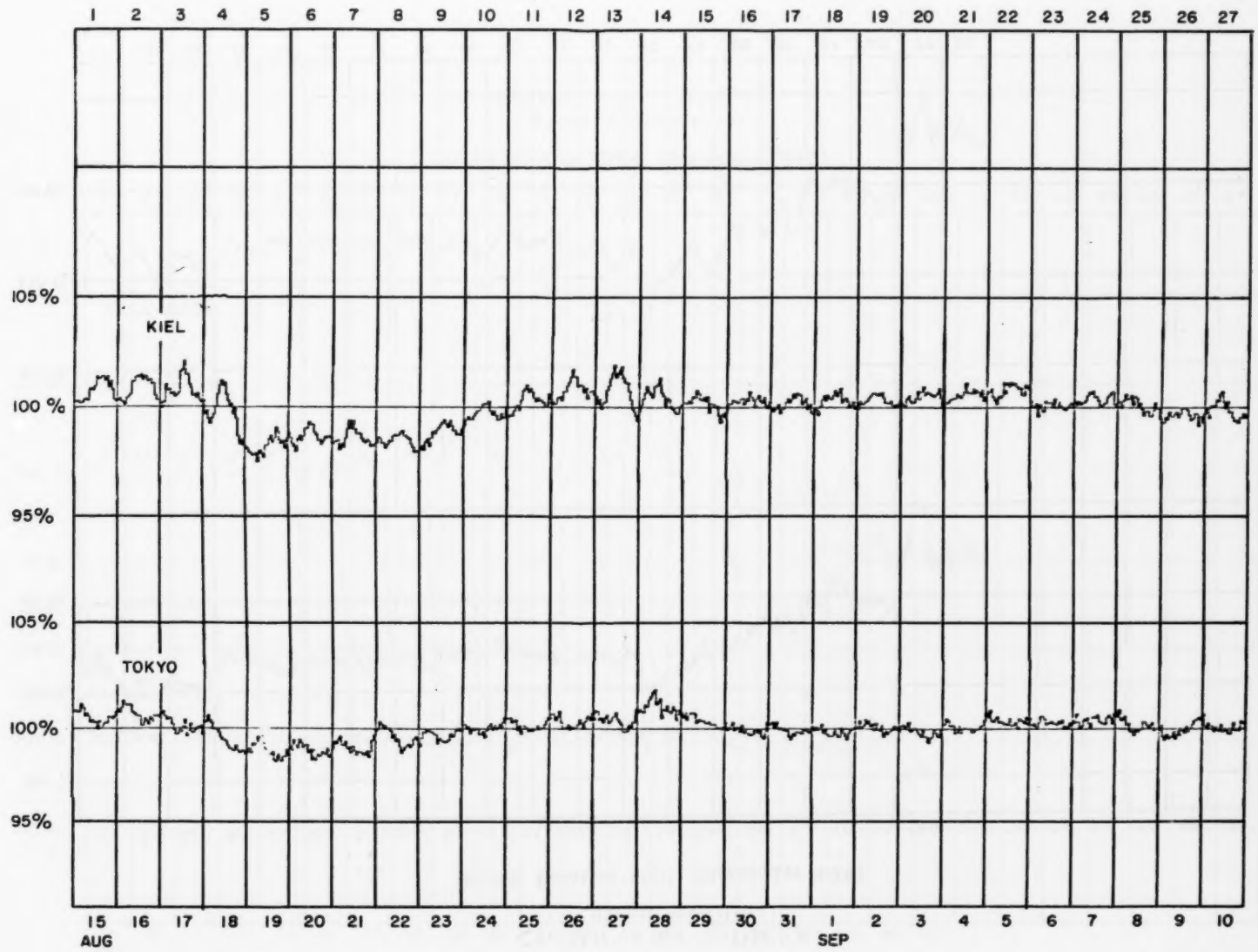
Bartels Rotation 1983 (August-September 1978)

AUG

SEP

COSMIC RAY INDICES
(Neutron Monitors)

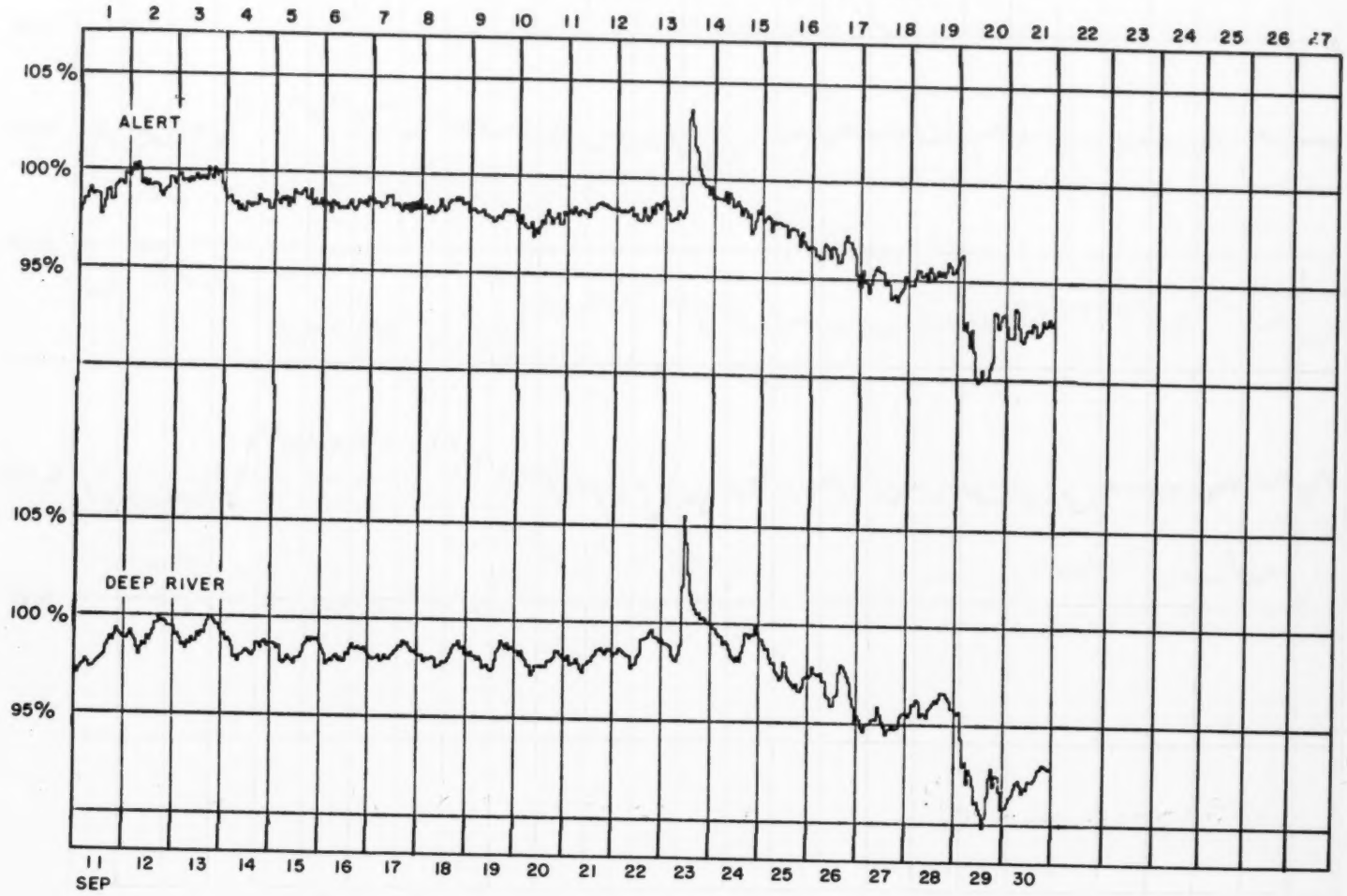
Bartels Rotation 1983 (August - September 1978)



147
Sep 78

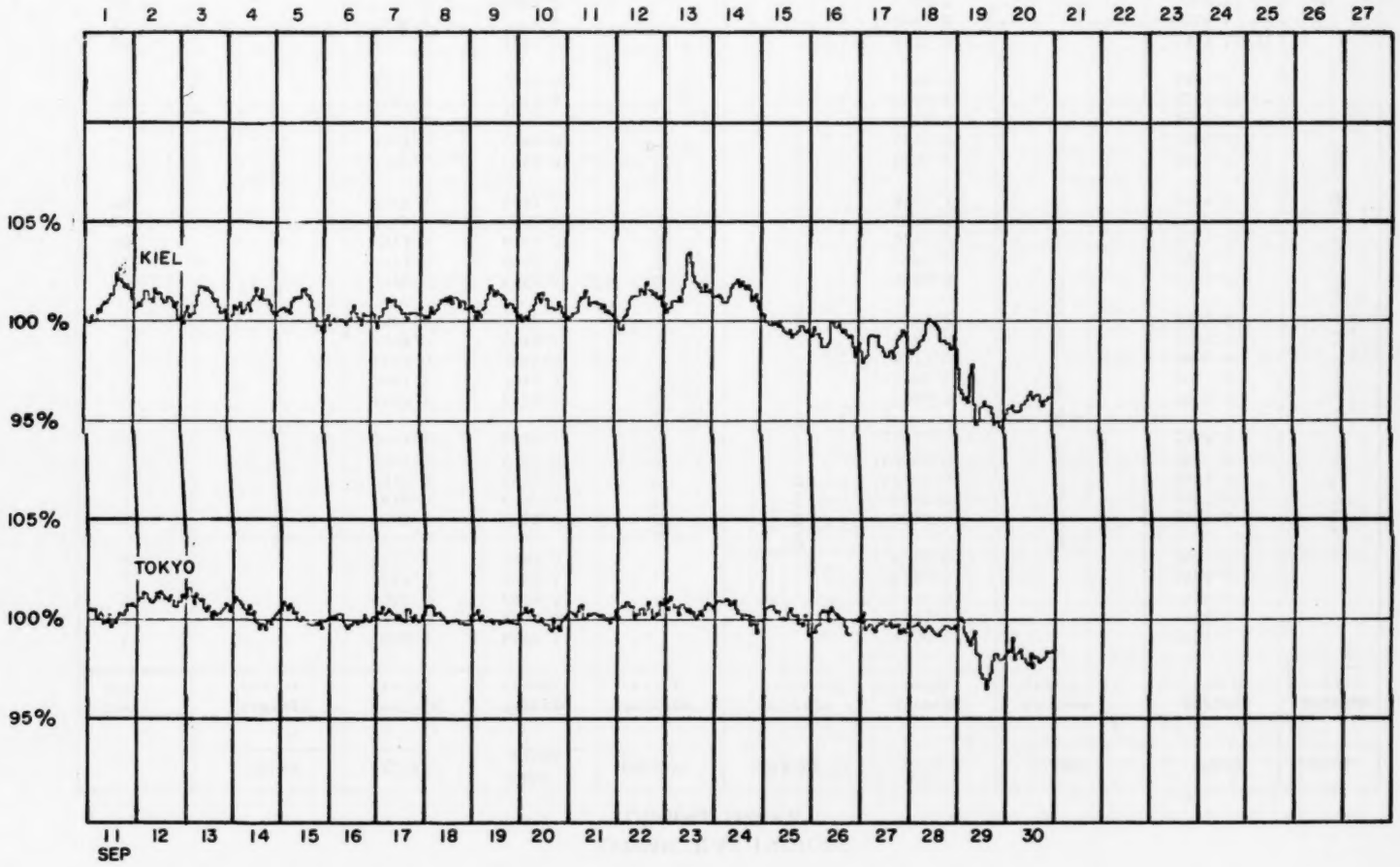
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1984 (September 1978)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1984 (September 1978)



COSMIC RAY INDICES

(Neutron Monitors)

Sept. 1978	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr	KULA Average cts/hr
1	Data not available at time of publication	7338.8	6899.5	Data not available at time of publication	Data not available at time of publication	6260.6	Data not available at time of publication	3579.1	Data not available at time of publication
2		7355.8	6904.4			6263.0		3588.5	
3		7382.6	6923.5			6274.3		3579.6	
4		7412.8	6953.4			6281.5		3588.8	
5		7423.4	6983.0			6296.6		3601.5	
6		7360.4	6923.7			6244.2		3597.4	
7		7416.0	6937.4			6265.9		3602.8	
8		7370.8	6938.0			6244.3		3593.9	
9		7334.2	6907.0			6209.0		3583.9	
10		7348.1	6924.2			6228.6		3588.8	
11		7400.2	6943.7			6285.3		3590.3	
12		7447.2	7014.7			6280.6		3617.3	
13		7462.0	7018.6			6272.0		3606.0	
14		7369.0	6970.6			6267.8		3589.3	
15		7391.6	6964.4			6261.1		3583.8	
16		7370.0	6953.4			6226.3		3579.8	
17		7375.9	6957.5			6248.2		3588.4	
18		7373.0	6949.5			6265.8		3584.5	
19		7345.0	6952.0			6274.8		3578.9	
20		7318.4	6937.8			6257.7		3579.8	
21		7369.6	6949.3			6260.7		3588.8	
22		7365.0	6986.0			6276.8		3598.5	
23		7462.2	7091.5			6316.6		3600.0	
24		7387.5	7015.5			6304.1		3594.2	
25		7306.5	6920.0			6198.8		3585.5	
26		7226.1	6871.0			6171.9		3579.4(23)	
27		7119.1	6745.6			6141.6		3568.6	
28		7155.2	6806.7			6163.5		3562.8	
29		6932.3	6561.7			5964.3		3520.3	
30		6962.6	6547.1			5961.2		3515.1	
MEAN		7329.4	6915.0			6232.2		3583.8	

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

Notes: Thule, Alert, Calgary, Sulphur Mountain, Kiel, Climax and Kula Scaling Factors = 100. Deep River Scaling Factor = 300. Tokyo Scaling Factor = 256.

GEOMAGNETIC ACTIVITY INDICES

SEPTEMBER 1978

Day		Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa *					Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M			
1		3+	3	5	3+	4-	3	3-	3+	27+	3	3-	4	3	3	3-	2+	3+	21	31	32	37	26		1.1
2		3-	2+	5-	3	4	3-	4	3	26+	3-	2+	4+	3	3	2+	4-	3	20	34	33	28	39		1.0
3		2+	3-	3-	3-	3	3-	2+	2	20+	2	2+	2+	2+	3-	3-	2	2	11	24	17	24	18		0.6
4		2+	2	3-	2	2	2-	2+	2-	17-	2	2-	3-	2	2-	2-	2	2-	8	18	15	20	14		0.4
5	Q9A	1	1+	1+	2-	1	1+	3-	3	13+	1	1	1	1+	1	1	3-	3-	7	13	12	9	16	K	0.4
6		3+	4-	4+	4-	2+	1+	1	0+	20	3	3	4	4-	3-	1+	1	1-	14	21	36	44	13		0.8
7	Q7K	0	2-	1-	2-	1+	1+	3-	3-	12	0+	1+	1-	2-	1	1+	2	3-	6	12	11	8	16	C	0.3
8		5+	6-	4	3-	1+	1+	2+	2	25-	4+	4+	4-	3-	1+	1+	2-	2+	24	28	18	34	13		1.1
9		3+	4-	4	5	5-	5-	4-	4+	33+	3+	4-	3+	5-	4+	4	4-	4-	31	45	69	58	57		1.3
10		4	2-	1	3	4-	2	2-	2	19	4-	2-	1+	3-	3	2	1+	2-	12	22	20	22	21		0.7
11		2	0+	0+	2-	4	4+	3-	2+	18-	2-	1-	0+	2-	4	4-	3-	3-	12	20	23	10	34		0.7
12		3-	3-	3+	2+	4-	2	2+	3	22	2	2+	3	2+	4	3-	3	3	13	20	25	20	26		0.7
13	Q8	2+	1	2+	2+	1+	2-	2-	1	14-	2+	1	2+	2+	1	2-	1+	1+	6	13	13	16	11	C	0.3
14	Q4K	3	2-	0+	1-	1-	1	0+	1-	8+	3-	1+	1-	0+	1-	1-	0+	1-	5	7	8	11	5	CC	0.2
15	Q3	0+	0	1-	1	1-	0+	0+	2	5+	0+	0	0+	1	1-	0+	0	2-	3	4	7	5	5	CC	0.1
16	Q6	2-	3-	2-	0+	2-	1+	1+	2	13-	1+	2+	2-	0	1	1	1+	2+	6	13	10	11	13	CK	0.3
17	Q0A	2-	3	3+	2-	1+	1	1-	2-	14+	1+	3-	3	2-	1	1-	1-	2-	8	13	13	19	8	KK	0.4
18	Q2	0+	0+	0+	1-	1	0+	1+	0+	5-	0	1-	0+	0+	1	0+	1-	0+	3	4	5	4	5	CC	0.0
19	Q1	0+	0+	0+	0	0+	0+	0+	0	2	0+	0	0	0	0	0+	0	0	2	3	6	4	4	CC	0.0
20	Q5K	1	0	0+	1-	1+	0+	2-	3	8+	0+	0	0	0	1+	0+	1+	3-	5	10	10	5	15	KK	0.2
21		2	4-	3	2+	1	2	1-	1-	15+	2-	3	3-	2	1	2	1-	1	9	13	20	25	9		0.5
22		2	2+	3+	2	3	3	3	2	21-	2-	2	3	2	3-	3+	3-	2	12	20	20	17	23		0.7
23		2	3-	2+	3-	3-	3-	2+	3-	20	1+	2	2	2	3	3-	3-	3-	11	23	16	14	26		0.6
24		2-	3-	2	1-	2-	3	2+	4-	18-	1+	2	2-	1-	1	3-	2+	3+	10	20	17	11	27		0.6
25	D5	3-	3	5-	5+	5	6-	4-	4	34	2+	2+	4-	5-	5-	5-	4-	4	36	50	49	41	58		1.4
26	D4	3-	5-	6	5-	4	5-	4	4	35-	2+	4	5+	4+	4-	4	4-	4-	36	36	69	59	46		1.4
27	D3	6-	5+	4-	4-	4-	5+	6-	6+	39+	5+	4	3	3+	3+	4+	5	5	51	60	66	49	77		1.6
28	D2	5	5	5+	5+	5	3+	4+	6+	40-	4	4+	4	4+	5-	3	4-	5+	50	57	59	60	57		1.6
29	D1	4+	7-	8-	8	8	7-	4-	2-	47-	3+	5+	7	7	7	6-	3+	2	109	106	120	139	86		1.9
30		1+	4	4-	2+	2-	2-	2+	2	19	1+	3+	3+	2+	1+	1+	2	2	11	19	23	26	16		0.7
																			18	25.3	28.1	26.9			0.72

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	3	3	5-	3	3+	3-	2+	3	3+	3-	4-	3	3-	2+	2+	4-
2	2+	2	5-	3	3+	3-	4-	3	3	3-	4-	3	3	2	4-	3
3	2	2+	3-	3-	3-	3-	2+	2	2+	3-	2+	2	2+	2+	2	2
4	2-	2-	3	2+	2	2	2+	2-	2+	2	2+	2-	1	1+	2	2-
5	1-	1	1+	2-	1	1+	3-	3	1	1	1	1	1+	1-	2+	3-
6	3	3	4+	4-	3-	2-	1+	1-	3+	3	4-	4-	2+	1+	1-	0+
7	0	1	1-	2	1+	2-	2+	3-	0+	1+	0+	1+	1	1+	2-	2+
8	5-	5-	4-	3-	1+	1+	2+	2+	4+	4	4-	3-	1	1	1+	2
9	3+	3+	4-	5-	4+	4	4-	3+	3+	4	3	5-	4	4	4-	4+
10	3+	2-	1+	3	3	2	2-	2-	4	2	1+	2+	3-	2-	1	1+
11	2-	1-	0	1+	4	3+	3-	3-	2-	1	1	2	4	4-	3-	3-
12	2	2	3	2+	4	3-	3	3	2+	2+	3-	3-	4-	2+	3-	3
13	2	1-	3-	3-	1	2-	1+	1	2+	1+	2	2	1-	2-	1+	1+
14	3-	1+	1-	0+	1-	1-	0+	1-	3-	2-	1	1-	0+	0+	0+	1-
15	0+	0	0+	1	1	0+	0	2-	0+	0+	0+	1	0+	0+	0	2-
16	1	2+	1+	0+	1+	1+	1	2+	2	3-	2-	0	1-	1-	0+	2
17	1+	2+	3-	2-	1	1	1-	2-	1+	3	3	2-	1	0+	1-	2-
18	0	0+	0+	1-	1	0+	1	0	0	1	0+	0+	1	0+	1-	0+
19	0	0	0+	0	0	0+	0	0	1-	0+	0	0	0+	0+	0	0
20	0+	0	0	0+	1+	0	1+	3-	0+	0	0+	0	1+	0+	1+	3-
21	2-	3-	2+	2+	1	2+	1-	1	2	3	3	2	1	2-	1-	1-
22	1+	2	3	2-	3-	3+	3-	2	2+	2	3-	2+	3-	3+	3-	2
23	1+	2	2	2	3	3-	3-	3	1+	2	2-	2-	3-	2+	2+	2+
24	1+	2	1+	1-	1+	3	2+	3	1+	2	2	1-	1	3-	2	3+
25	2+	2	4-	5-	4+	4+	4-	4	3-	3-	4-	5-	5-	5	4-	4-
26	2	4+	5+	4	3+	4+	4-	3+	3-	4-	5+	5-	4-	4	4-	4
27	5	4+	3	3+	3+	4+	5	5	5+	4-	3	4-	4-	5-	5	5+
28	4-	5-	4	4+	4	3+	4-	5	4+	4+	4	4+	5-	3	4	6-
29	3+	6-	7+	7+	7	6-	3+	1+	4-	5+	7	7	7	6-	3+	2+
30	1	3+	4-	2	1+	1+	2-	2	1+	3+	3	3-	1+	1+	2+	2

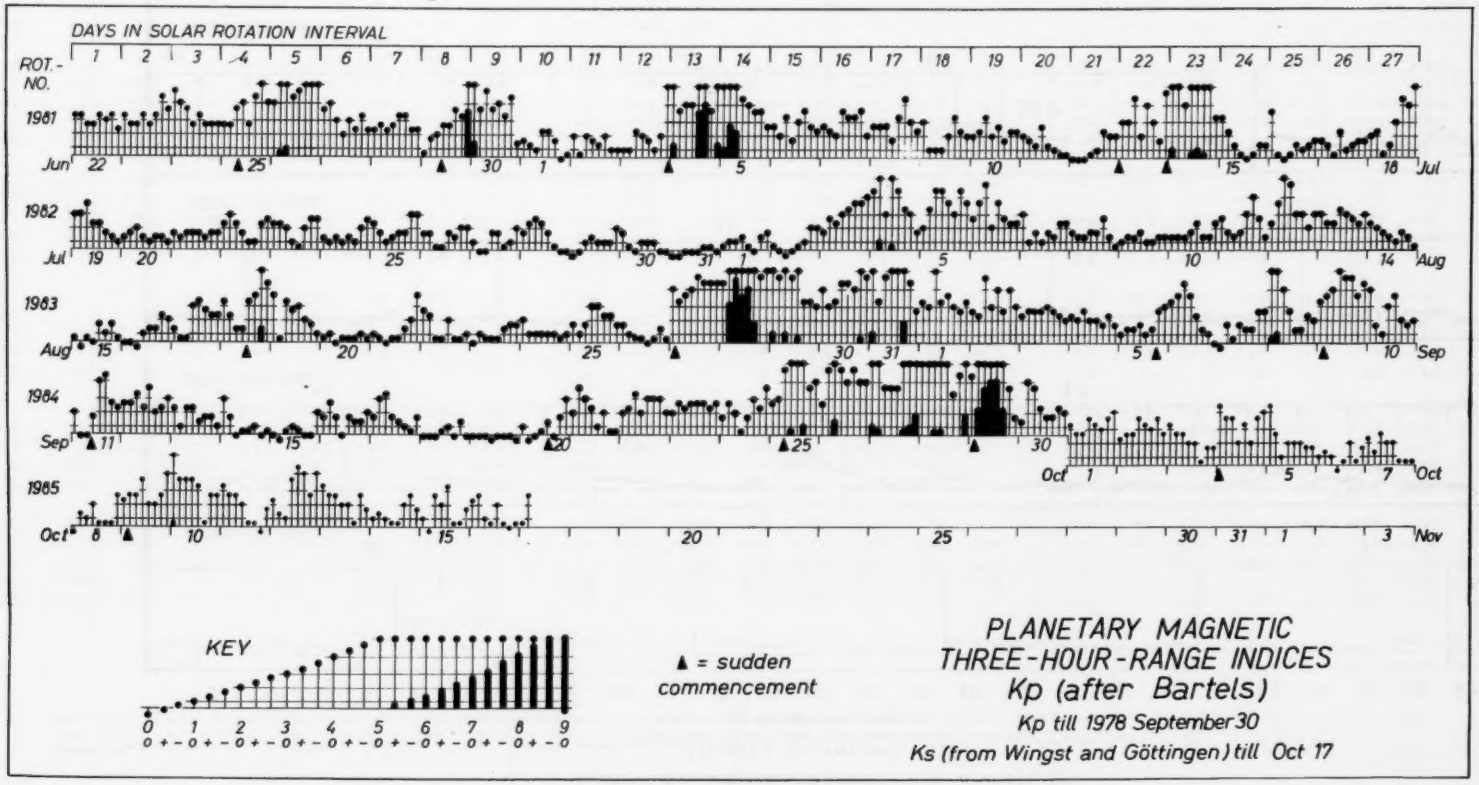
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2γ) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap ≤6 but one Kp ≥3o or two Kp values ≥3-"). An * means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices (Kn), (Ks) and (Km) as in IAGA-Bulletin No. 32 and indices (aa), "antipodal", as in IAGA-Bulletin No. 33 prepared by P. N. Mayaud of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 12 UT.

DAILY AVERAGE INDICES Ap

	1977			1978								
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4	5	6	7	15	33	12	88	9	6	4	21
2	5	6	69	8	14	27	15	94	82	5	4	20
3	10	4	9	13	14	15	41	83	31	11	16	11
4	7	8	14	89	11	3	55	96	26	80	30	8
5	8	10	18	31	17	6	21	7	38	53	22	7
6	8	7	5	34	14	7	9	5	8	13	16	14
7	3	5	3	13	7	9	5	7	11	14	7	6
8	6	3	2	19	10	20	5	16	10	14	6	24
9	2	3	3	23	16	14	6	95	4	8	5	31
10	4	9	4	21	7	12	36	10	24	10	6	12
11	12	6	38	7	5	7	64	30	17	6	11	12
12	28	18	21	4	10	3	29	18	10	4	21	13
13	14	26	16	8	8	12	24	11	7	20	13	6
14	13	42	8	3	11	10	51	9	4	48	6	5
15	19	25	5	2	48	17	19	5	6	6	3	3
16	8	14	9	14	11	24	8	7	6	6	4	6
17	12	8	12	9	10	25	7	8	9	6	9	8
18	22	6	3	12	10	24	19	5	11	18	24	3
19	28	6	3	6	12	15	38	4	17	11	11	2
20	7	4	4	3	12	9	23	8	11	5	3	5
21	5	5	6	1	12	7	9	26	33	6	6	9
22	22	3	6	3	22	13	8	24	15	8	6	12
23	6	2	4	2	6	15	22	24	18	8	4	11
24	6	2	5	6	5	6	48	26	19	6	4	10
25	4	15	5	12	12	3	17	10	24	8	9	36
26	6	19	11	12	37	49	18	7	46	5	4	36
27	62	12	6	5	42	70	16	5	15	4	29	51
28	47	5	10	9	46	17	12	7	12	6	124	50
29	9	6	8	36		14	6	8	32	4	40	109
30	9	12	5	36		16	58	18	31	3	31	11
31	6		6	23		8		12		2	45	
MEAN	13	10	10	15	16	16	23	25	20	13	17	16

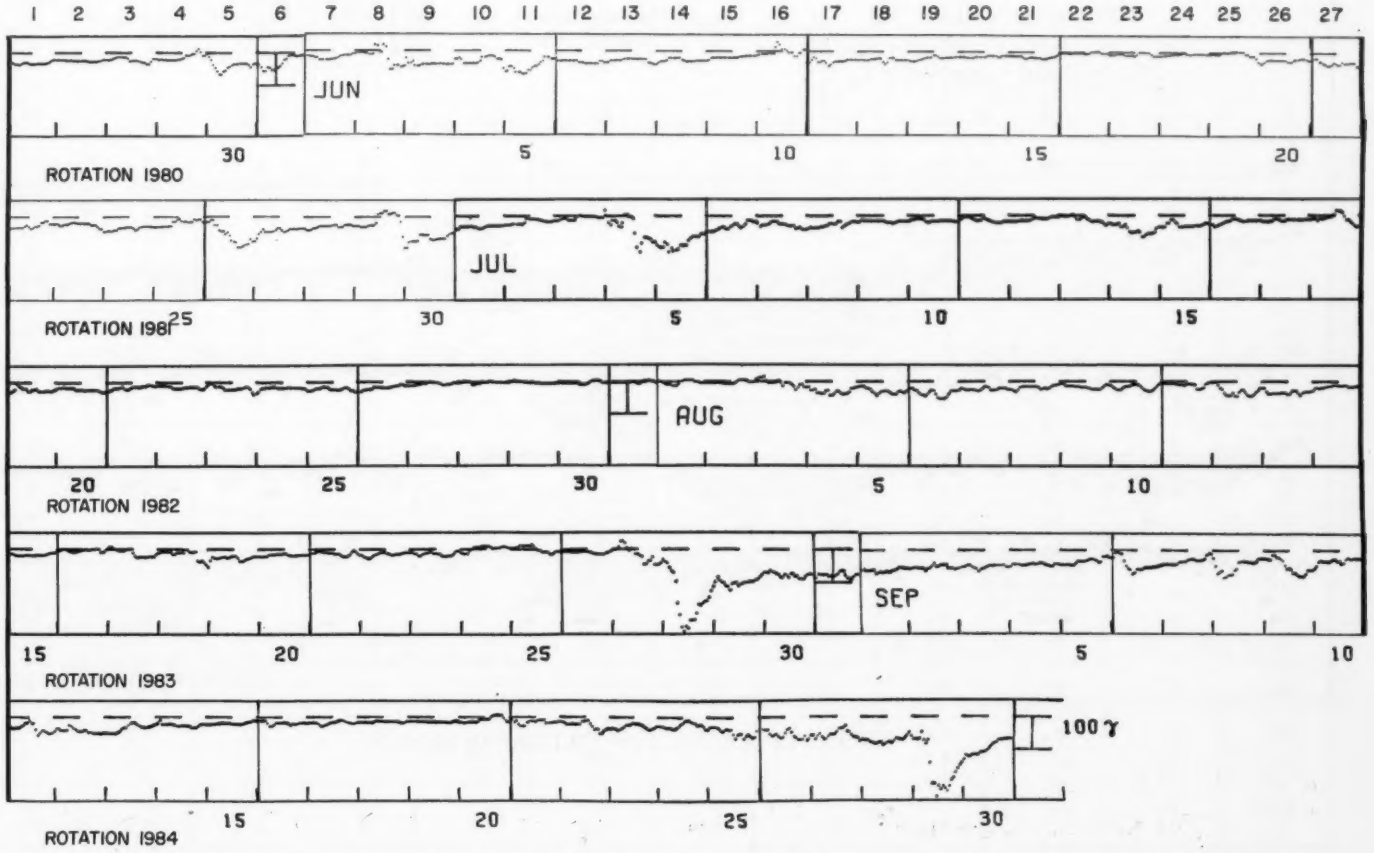
GEOMAGNETIC ACTIVITY INDICES


DAYS IN SOLAR ROTATION INTERVAL
ROT.-NO.
1981
1982
1983
1984
1985
KEY
0 1 2 3 4 5 6 7 8 9
0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0
▲ = sudden commencement
PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES
Kp (after Bartels)
Kp till 1978 September 30
Ks (from Wingst and Göttingen) till Oct 17

GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

SEPTEMBER 1978

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-64	-58	-63	-63	-62	-60	-62	-71	-68	-65	-68	-67	-63	-67	-65	-62	-60	-58	-53	-52	-54	-56	-56	-58
2	-56	-54	-53	-53	-56	-55	-57	-63	-56	-54	-48	-41	-50	-50	-46	-44	-44	-45	-54	-54	-56	-59	-55	-55
3	-52	-50	-48	-45	-47	-52	-56	-58	-64	-59	-56	-54	-50	-46	-46	-46	-46	-46	-47	-46	-44	-51	-51	-50
4	-43	-44	-43	-45	-47	-46	-45	-44	-42	-40	-42	-44	-41	-38	-39	-41	-45	-47	-51	-48	-42	-42	-44	-46
5	-45	-45	-43	-45	-47	-46	-40	-34	-36	-34	-34	-33	-30	-27	-29	-31	-34	-38	-36	-20	-21	-17	-23	-25
6	-25	-9	-5	-11	-13	-35	-49	-56	-61	-72	-68	-58	-58	-58	-55	-51	-53	-52	-53	-50	-49	-47	-45	-43
7	-41	-42	-42	-43	-44	-45	-41	-36	-35	-35	-34	-29	-27	-26	-27	-32	-30	-30	-29	-25	-14	-9	-13	-24
8	-48	-71	-66	-62	-84	-81	-76	-73	-72	-61	-56	-36	-34	-33	-33	-37	-37	-37	-39	-36	-28	-24	-25	-26
9	-25	-28	-30	-13	-14	-22	-24	-29	-34	-48	-57	-54	-60	-69	-69	-75	-80	-80	-81	-72	-61	-61	-62	-57
10	-49	-36	-32	-36	-36	-37	-36	-32	-28	-29	-35	-33	-41	-39	-30	-24	-29	-28	-25	-26	-26	-26	-27	-31
11	-31	-31	-32	-36	-34	-34	-33	-30	-26	-19	-17	-12	-19	-22	-39	-57	-49	-41	-43	-47	-51	-51	-49	-44
12	-37	-36	-42	-41	-43	-40	-26	-30	-36	-39	-43	-45	-44	-40	-40	-47	-47	-50	-50	-50	-48	-52	-48	-48
13	-46	-51	-49	-50	-49	-47	-43	-36	-32	-33	-26	-19	-16	-18	-23	-28	-32	-33	-34	-31	-29	-27	-24	-22
14	-18	-11	-23	-23	-22	-21	-21	-24	-26	-29	-29	-27	-26	-27	-29	-29	-33	-34	-32	-29	-24	-21	-23	-24
15	-23	-23	-21	-21	-20	-19	-18	-19	-19	-19	-19	-22	-21	-21	-22	-23	-21	-18	-16	-14	-13	-11	-12	-13
16	-11	-12	-11	-11	-19	-28	-30	-24	-18	-17	-19	-18	-16	-18	-21	-26	-20	-23	-23	-18	-18	-16	-20	-19
17	-17	-17	-19	-17	-22	-28	-31	-25	-24	-20	-17	-16	-15	-13	-11	-10	-13	-17	-19	-20	-23	-21	-18	-16
18	-17	-17	-17	-16	-18	-19	-17	-13	-12	-14	-15	-14	-14	-13	-14	-15	-13	-14	-15	-18	-20	-17	-13	-13
19	-14	-14	-13	-14	-15	-15	-15	-15	-16	-15	-16	-15	-15	-15	-15	-16	-17	-17	-18	-17	-13	-12	-13	-16
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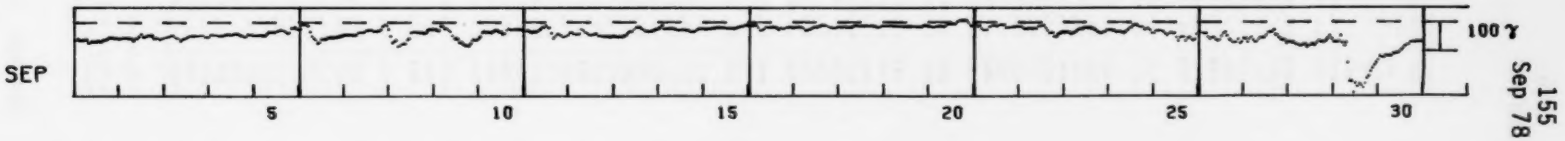
22	-16	-20	-24	-22	-21	-21	-24	-21	-24	-14	-14	-11	-12	-21	-30	-39	-36	-38	-49	-50	-41	-37	-34	-35
23	-34	-35	-37	-41	-37	-35	-30	-24	-23	-25	-18	-20	-21	-21	-23	-25	-29	-34	-38	-39	-35	-33	-27	-28
24	-27	-30	-31	-35	-32	-32	-37	-38	-33	-28	-21	-17	-11	-10	-12	-16	-19	-19	-26	-23	-21	-29	-38	-38
25	-32	-29	-31	-32	-35	-40	-46	-39	-36	-39	-39	-54	-64	-54	-50	-53	-66	-58	-52	-59	-64	-60	-42	-37
26	-38	-39	-40	-40	-52	-59	-54	-52	-60	-65	-62	-49	-40	-36	-47	-60	-64	-70	-70	-69	-60	-73	-67	-56
27	-57	-68	-60	-53	-62	-69	-67	-61	-54	-55	-54	-46	-37	-35	-34	-28	-45	-47	-55	-62	-62	-64	-74	-68
28	-71	-71	-72	-77	-80	-83	-81	-78	-77	-86	-82	-78	-75	-81	-73	-65	-68	-70	-71	-65	-58	-49	-59	-70
29	-67	-70	-66	-47	-72	-82	-71	-141	-203	-203	-241	-208	-218	-211	-216	-224	-210	-191	-185	-167	-157	-147	-138	-129
30	-116	-121	-120	-114	-114	-115	-114	-108	-107	-105	-103	-97	-90	-84	-80	-77	-70	-67	-67	-65	-66	-65	-65	-65



PRINCIPAL MAGNETIC STORMS

SEPTEMBER 1978

OBS. 3 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
NEW	55.1N	5	1858	SC	2	13	--	06(3,4)	5	21	172	123	06	19
HYB	07.6N	5	1858	SC	- .3	+14	- 1	06(2,3)	4	5	125	31	06	19
GUA	04.0N	5	1859	..	..	..	..	06(2)	5	--	190	30	06	18
NEW	55.1N	7	2256					08(1) 09(4)	6	32	154	232	11	03
JAI	17.3N	7	1900	..	..	..	..	--	-	6	78	37	08	12
SHL	14.6N	7	1900	..	..	..	..	--	-	5	76	27	08	12
UJJ	13.5N	7	1900	..	..	..	..	--	-	5	71	38	08	12
ABG	09.5N	7	1900	..	..	..	..	08(1,3)	5	5	56	46	08	12
HYB	07.6N	7	1200	..	..	..	..	08(1)	5	4	65	29	08	23
ANN	01.4N	7	1900	..	..	..	..	--	-	3	91	49	08	12
TRD	01.2S	7	1900	..	..	..	..	--	-	2	137	65	08	12
FRD	49.6N	8	00--	..	..	..	..	08(2)	6	27	132	54	10	18
HUA	00.6S	8	0000	..	..	..	..	09(5)	6	4	254	43	09	20
JAI	17.3N	9	0255	SC	- 1.1	22	- 5	--	-	8	87	37	10	19
SHL	14.6N	9	0255	SC	.6	26	4	--	-	7	103	37	10	19
UJJ	13.5N	9	0255	SC	--	--	--	--	-	6	107	44	10	19
ABG	09.5N	9	0255	SC	- .7	25	- 7	09(4,7)	5	6	121	59	10	19
HYB	07.6N	9	0240	SC	- .2	+19	- 2	09(1,7)	5	6	137	44	10	19
GUA	04.0N	9	0243	..	..	..	..	09(3)	5	--	160	50	09	19
ANN	01.4N	9	0255	SC	- 1.7	50	17	--	-	5	183	70	10	19
TRD	01.2S	9	0255	SC	- .3	46	51	--	-	5	221	112	10	19
GNA	43.3S	9	02--	..	..	..	..	09(4)	6	16	80	120	10	19
TOO	46.7S	9	01--	..	..	..	..	09(4)	6	21	138	150	10	00
GUA	04.0N	10	0102	SC*	--	+22	- 6	10(1)	5	--	90	30	10	19
HUA	00.6S	10	0105	SC	1	27	4	10(5)	5	3	228	34	10	19
JAI	17.3N	11	0900	SC	- .2	7	- 1	--	-	7	100	35	13	03
SHL	14.6N	11	0900	SC	.1	6	1	--	-	7	100	35	13	03
UJJ	13.5N	11	0900	SC	- .1	10	- 2	--	-	6	117	41	13	03
ABG	09.5N	11	0900	SC	- .1	7	- 1	11(5,6)	5	7	117	51	13	03
HYB	07.6N	11	0900	SC	- .1	+ 7	- 1	11(5,6)	5	6	135	42	12	23
ANN	01.4N	11	0900	SC	- .3	10	4	--	-	6	170	77	13	03
TRD	01.2S	11	0900	SC	.1	13	16	--	-	4	226	93	13	03
GNA	43.3S	11	0900	SC	+ .8	+ 7	+ 5	11(5,6) 12(5)	5	13	70	90	13	02
HYB	07.6N	20	1418	SC	- .1	+ 6	- 1	21(1,2)	3	7	75	33	21	18
NEW	55.1N	24	2133	SC	2	9	--	26(3)	7	61	318	316	29	03
COL	64.6N	25	05--	SC	--	--	--	26(3) 29(3,4)	8	354	2430	2010	29	20
SIT	60.1N	25	05--	..	..	..	..	29(5)	9	--	--	--	30	10
WIT	54.2N	25	0719	SC	- 5	+11		27(6,7) 28(8)	6	36	225	90	29	02
FRD	49.6N	25	0718	SC	+ 1	+25	- 5	29(4)	7	52	355	283	29	19
JAI	17.3N	25	0718	SC	- .5	21	- 4	--	-	10	121	46	29	01
SHL	14.6N	25	0718	SC	.3	17	2	--	-	8	127	41	29	01
UJJ	13.5N	25	0718	SC	- .2	27	- 5	--	-	8	151	46	29	01
ABG	09.5N	25	0718	SC	- .5	22	- 3	25(4)	6	8	145	48	29	01
HYB	07.6N	25	0719	SC	- .2	+23	- 3	25(4,5,6)	5	6	139	36	26	18
GUA	04.0N	25	0718	..	..	..	..	25(4)	6	10	140	40	29	03
ANN	01.4N	25	0718	SC	- 1.1	38	14	--	-	6	166	86	29	01
HUA	00.6S	25	0717	SC	1	34	5	25(5,6,7)	6	8	296	38	26	18
TRD	01.2S	25	0718	SC		38	46	--	-	5	205	123	29	01
HER	33.7S	25	0719	SC	- 1	+ 5		29(3)	7	38	265	156	30	15
GNA	43.3S	25	0717	SC*	+ 1.4	- 7 *	+ 5	25(4,5,6)	5	20	80	110	26	00
TOO	46.7S	25	07--	..	..	..	..	29(4,5)	7	42	271	208	29	19
HYB	07.6N	26	2009	SC	- .2	+15	- 1	27(2,7)	5	7	124	27	28	20
HUA	00.6S	26	2010	SC	1	30	2	27(5,6,7)	5	9	333	62	29	01
GNA	43.3S	26	0107	SC*	+ 2.8	+ 5 *	+ 5	26(3)	6	20	140	130	29	00
HYB	07.6N	28	2105	SC	- .4	+15	- 1		-	--	--	--		
NEW	55.1N	29	0302	SC*	10	53	6	29(3,4,5)	9	131	1394	991	30	11
WIT	54.2N	29	0301	SC*	-11 *	+50		29(3,5)	7	46	335	280	29	19
SJG	29.9N	29	0301	SC	--	+29	+ 8	29(3)	7	10	165	42	30	08
JAI	17.3N	29	0301	SC	- 1.1	23	- 7	--	-	7	303	101	30	10
SHL	14.6N	29	0301	SC	.8	33	5	--	-	8	427	69	30	10
UJJ	13.5N	29	0301	SC	--	--	--	--	-	--	368	46	30	10
ABG	09.5N	29	0301	SC	- .7	..	- 6	29(3)	8	11	326	53	30	10
HYB	07.6N	29	0301	SC	- .4	+28	- 4	29(3,4,5)	8	9	335	54	30	20
GUA	04.0N	29	0301	SC*	+ 1	+56	-16	29(3)	7	10	360	30	30	13
ANN	01.4N	29	0301	SC	- 1.7	58	18	--	-	8	390	--	30	10
HUA	00.6S	29	0302	SC	1	53	9	29(5)	7	14	339	58	30	01
TRD	01.2S	29	0301	SC	- .2	48	52	--	-	5	444	291	30	10
GNA	43.3S	29	0301	SC*	-11.0*	+22 *	-32 *	29(4,5)	8	50	230	290	29	19

Reports were received from the following observatories:

Alibag Annamalainagar College Fredericksburg Gnangara Guam Hermanus Huancayo
Hyderabad Irkutsk Jaipur Newport San Juan Shillong Toolangi Trivandrum
Ujjain Witteveen

Please note: The Boulder Geomagnetic Observatory converted to digital format in March 1978. Since that time, data which were reduced from the anolog recordings are no longer available, e.g., Principal magnetic storms and K indices.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

SEPTEMBER 1978

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-News No. 16.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc).

05 1859 A: HUA ;B: WIT ESK HAD FUR TOL KAK ;C: WNG BDV MMB EBR
HAZ KNY (si: B: HRB - b: A: LMM)

09 0254 B: WNG WIT HRB MMB TOL KAK HAZ KNY ;C: NGK BDV EBR

11 0900 A: PAF ;B: SOD VIC ;C: WNG WIT BDV MMB KAK CZT
(si: C: LMM - sfe: HRB)

20 1417 A: PAF ;B: SOD WNG HUA ;C: WIT NGK HAD BDV DRV
(si: B: HRB)

25 0718 A: SOD DOB NUR WNG FUR HRB COI TOL HUA LMM PAF DRV ;
B: WIT HAD BDV EBR KAK CZT ;C: NGK MMB HAZ KNY

29 0301 A: SOD NUR WNG WIT DOU VIC FUR MMB EBR COI TOL KAK
HAZ KNY HUA LMM CZT PAF DRV ;B: NGK HAD BDV

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

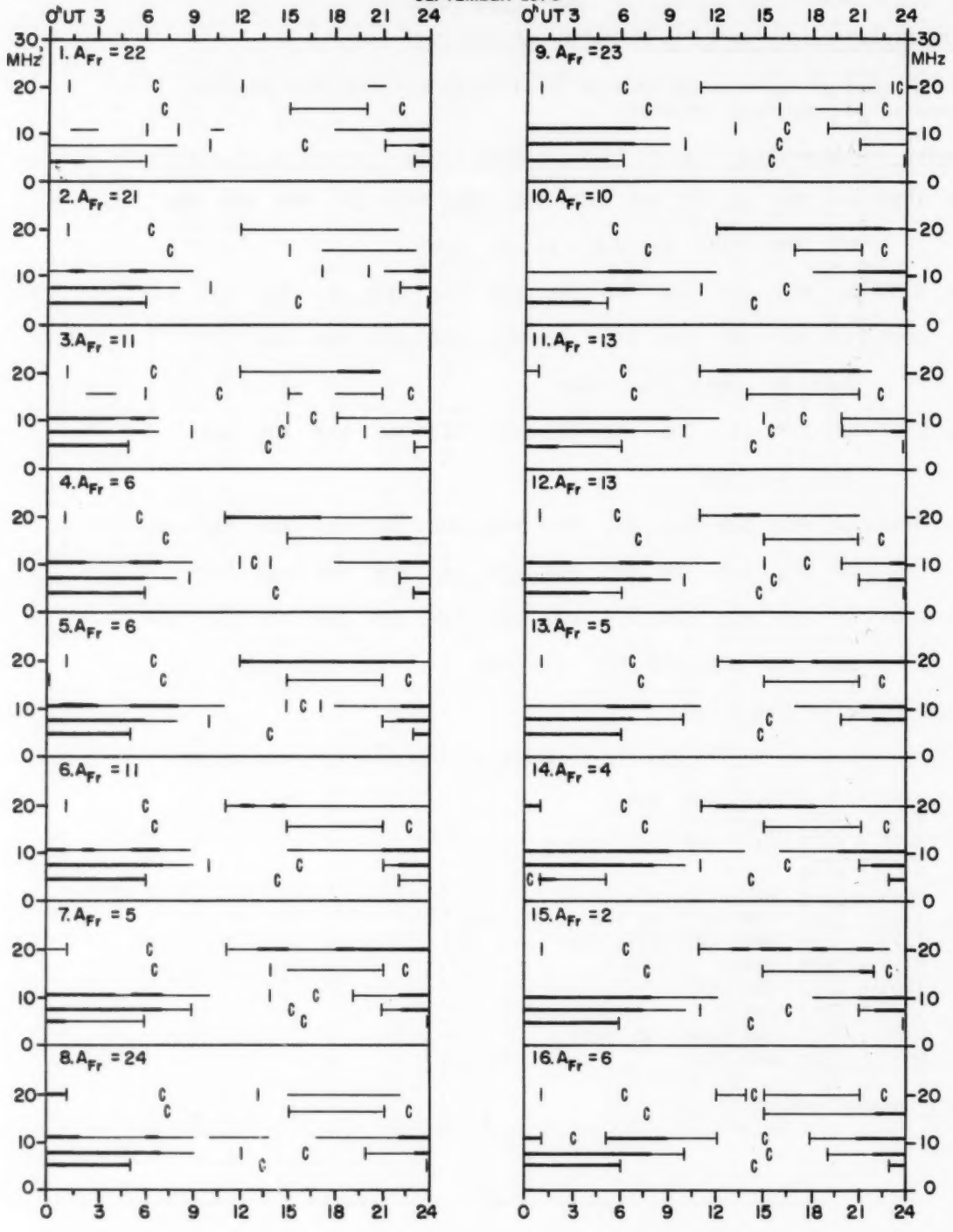
02	0552 - 0617	MMB HAZ KNY
02	1153 - 1310	WNG
03	0514 - 0532	HAZ KNY
04	0429 - 0440	HAZ
07	0440 - 0454	HAZ
10	1140 - 1152	EBR (si: A: HRB ; B: TOL)
16	1325 - 1358	WNG EBR HUA (bp: C: LMM)
17	0340 - 0458	HAZ
17	1503 - 1513	EBR HUA
18	1325 - 1344	HUA
20	0924 - 0935	HRB (ssc: C: SOD)
21	0411 - 0435	MMB HAZ

Very unusual events

none

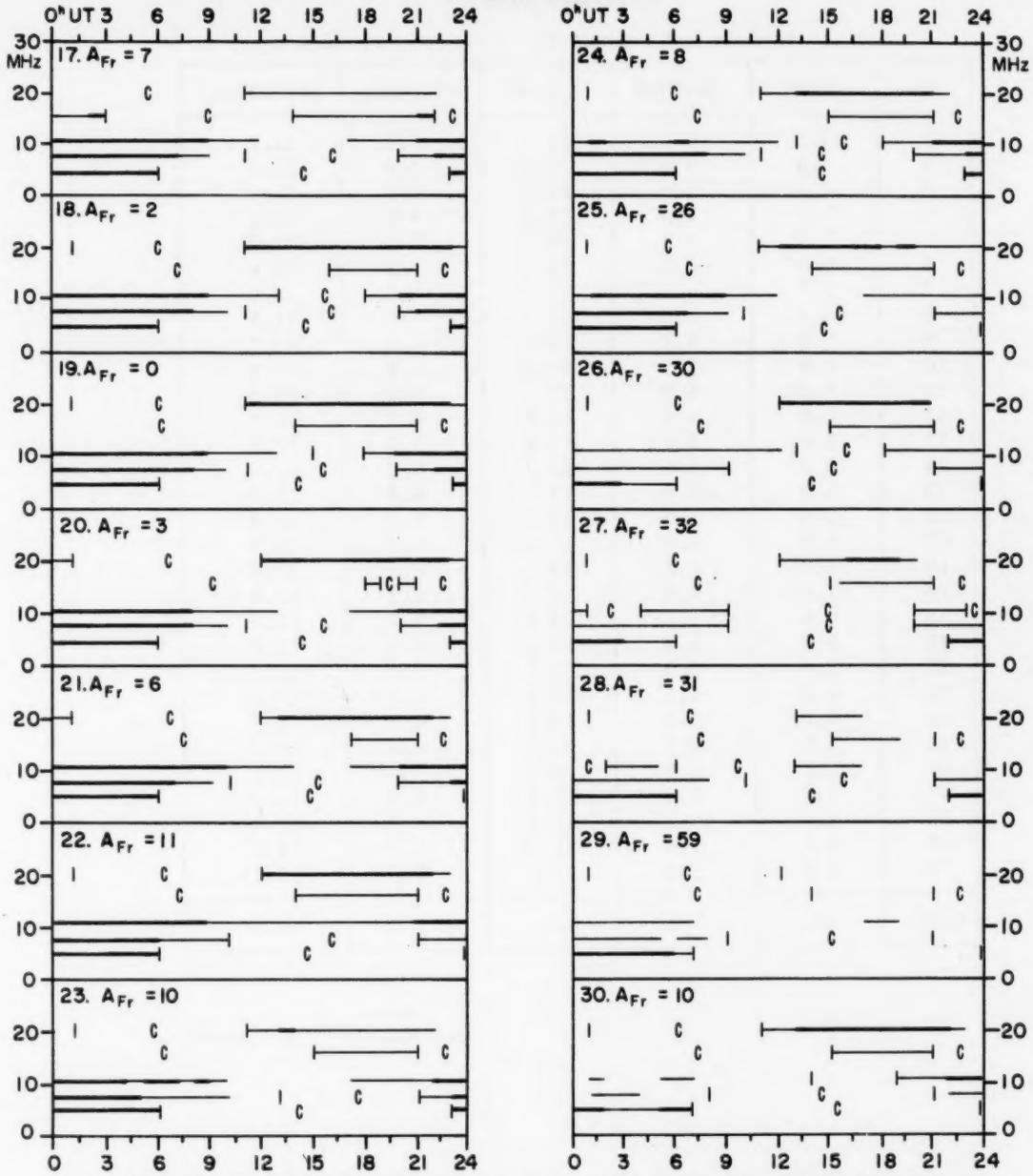
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

SEPTEMBER 1978



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

SEPTEMBER 1978



Field strengths from five frequencies, 5.0, 8.1, 10.9, 16.4 and 20.0 MHz, observed on a Lüchow - Norfolk circuit are represented above. Heavy solid lines represent field strengths ≥ -12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

SEPTEMBER 1978

Quality indices calculated for reception at Lüchow

DAY	TOKYO	NORFOLK	MOSCOW	CANBERRA	BRACKNELL
1	3.8	3.4	11.2	2.9	11.2
2	3.8	3.6	12.1	3.8	12.2
3	4.2	3.5	10.9	3.2	11.4
4	5.1	4.0	12.3	3.5	12.1
5	5.2	5.3	12.2	3.7	11.9
6	5.6	4.5	12.3	4.1	11.6
7	5.7	4.5	12.2	4.1	13.0
8	4.3	3.7	11.2	4.5	11.7
9	5.0	4.1	12.4	4.3	12.7
10	4.8	5.1	11.4	4.1	12.2
11	4.2	4.8	11.8	4.0	12.2
12	4.0	4.8	11.6	4.5	12.1
13	5.6	5.6	12.0	5.5	12.7
14	6.0	5.6	12.3	4.9	13.0
15	5.9	5.8	13.2	4.8	13.6
16	5.5	5.3	12.5	4.5	13.8
17	5.8	5.5	13.0	4.6	13.8
18	6.2	6.5	13.4	4.6	13.4
19	7.0	6.8	13.0	4.3	13.8
20	6.6	6.2	13.4	4.7	13.8
21	6.5	6.8	13.8	5.1	13.7
22	5.9	6.5	13.4	5.4	14.3
23	4.5	5.1	13.3	4.7	13.3
24	4.1	5.8	13.3	4.9	13.3
25	4.1	5.2	13.0	3.8	13.7
26	3.1	6.2	13.0	3.9	13.1
27	3.2	4.5	12.5	2.9	13.3
28	2.7	5.1	12.4	3.0	11.5
29	1.8	3.6	11.0	1.7	11.2
30	3.9	5.0	12.4	3.1	13.1
MEAN	4.8	5.1	12.4	4.1	12.8

USCOMM-NOAA-Asheville, NC - 12/78/950

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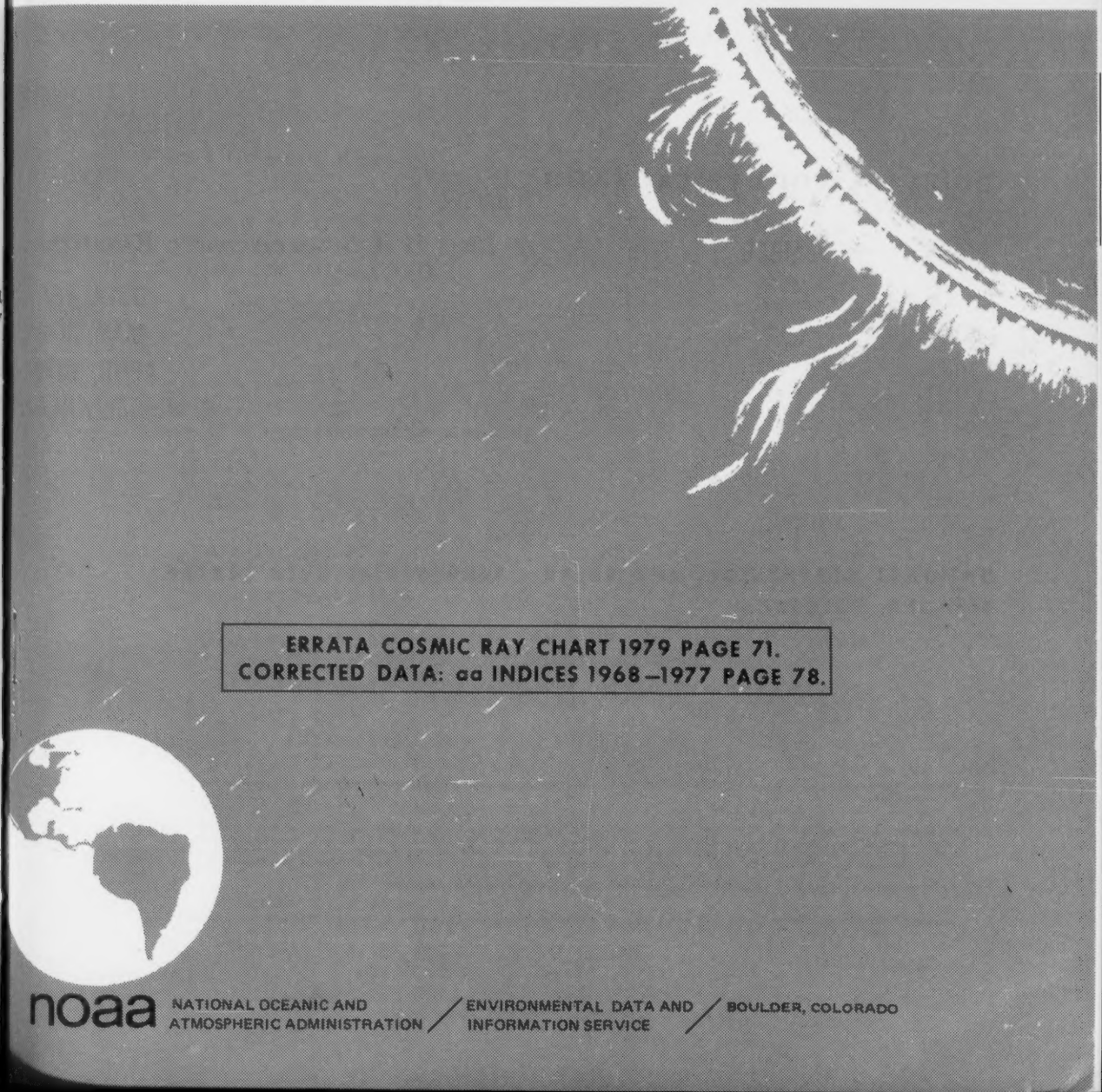
Solar-Geophysical Data comprehensive reports

DEC 1978

Data for May 1978 -- April 1978 & Miscellanea
Explanation of Data Reports Issued at as Number 402 (Supplement) February 1978



ERRATA COSMIC RAY CHART 1979 PAGE 71.
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noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE / BOULDER, COLORADO

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Richard A. Frank, Administrator
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Solar - Geophysical Data

NO. 411 NOVEMBER 1978

Part II (Comprehensive Reports)

DATA FOR
MAY 1978
APRIL 1978
& MISCELLANEA

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado 80303.

For sale through the National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO 80303. Subscription Price: $34.00 annually for both part I (Prompt Reports) and part II (Comprehensive Reports) or $18.00 annually for either part. Annual supplement containing explanation is included. For foreign mailing add $32.00 for both parts or $16.00 for either part. Single issue price is $1.50 for either part and $1.40 for the extra issue. Make checks and money orders payable to: Department of Commerce, NOAA/NGSDC.

To standardize referencing these reports in the open literature, the following format is recommended:

Solar-Geophysical Data, 390 Part I (or Part II), pages, February 1977, U.S. Department of Commerce, (Boulder, Colorado, U.S.A. 80303).

SOLAR-GEOPHYSICAL DATA

No. 411

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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Spectral Data Harvard July, August 1978
Geomagnetic Indices
aa Indices graph 1868-1977; corrected data 1968-1977
Energetic Solar Particles and Plasma
IMP 7 and 8 Energetic Solar
Particle Data April 1978

INDEX FOR 1978 DATA PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

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"410A 48" listed under 1978 Aug means that the sunspot drawings for August 1978 were contained in *Solar-Geophysical Data* Number 410 - Part I, beginning on page 48.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

MAY 1978 DATA

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ACTIVE REGIONS

CARRINGTON ROTATION 1667

(April 9 to May 6, 1978)

Region No.	Coordinates Lat.	Coordinates Long.	Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1666	Activity at West Limb
1	12°N	356°	+6	1	x		decreasing
2	18 N	350	>6	2			decreasing
3	15 S	348	+3	1	x		disappeared
4	17 N	337	+6	2			decreasing
5	18 N	331	-4	2			stable
6	29 S	329	>6	3			decreasing
7	20 N	308	-1	2			decreasing
8	34 S	307	>6	2			dispersed
9	34 S	304	>6	1	x		dispersed
10	20 N	301	+3	2			decreasing
11	15 N	297	0	3			decreasing
12	19 S	291	+1	2			decreasing
13	16 N	287	>6	3			increasing
14	10 N	285	-6	2			(?)
15	38 S	284	>6	1	x		dispersed
16	19 N	280	+1	2			dispersed
17	19 N	269	>6	3		(11)	decreasing
18	20 N	261	-3	3			increasing
19	25 S	260	+6	1	x		disappeared
20	41 N	250	-1	1	x		decreasing
21	42 S	247	>6	2			decreasing
22	30 N	213	+6	2			decreasing
23	17 N	211	-1	2			decreasing
24	29 S	202	>6	1	x		dispersed
25	30 S	199	+1	2			decreasing
26	28 N	194	>6	1	x		decreasing
27	30 S	194	-3	2			stable
28	29 S	190	>6	2			decreasing
29	22 N	189	+4	4			decreasing
30	18 N	187	+4	2			decreasing
31	15 N	182	-1	2			increasing
32	24 N	166	+2	2			decreasing
33	18 S	165	>6	3			decreasing
34	11 N	148	>6	1	x		dispersed
35	26 N	147	>6	1	x		dispersed
36	27 S	146	>6	1	x		dispersed
37	19 N	145	>6	1	x		dispersed
38	22 N	144	>6	1	x		dispersed
39	29 N	140	-3	2			increasing
40	30 N	133	+1	2			decreasing
41	14 N	128	+5	1	x		disappeared
42	32 S	115	+3	1	x		disappeared
43	13 N	113	-5	1	x		(?)
44	23 S	111	+6	1	x		disappeared
45	24 S	105	+4	1	x		disappeared
46	14 S	99	+2	1	x		disappeared
47	2 N	98	+6	1	x		disappeared
48	32 N	93	0	1	x		disappeared
49	18 N	87	>6	5			decreasing
50	24 N	68	>6	6			decreasing
51	23 N	52	>6	5			decreasing
52	21 N	39	>6	1	x	(54)	decreasing
53	22 S	27	-5	1	x		(?)
54	41 N	27	>6	1	x		disappeared
55	23 S	26	>6	1	x		disappeared
56	28 N	25	>6	1	x		dispersed
57	27 S	8	>6	1	x	(56+57)	decreasing
58	19 N	7	>6	1	x		dispersed

ACTIVE REGIONS

CARRINGTON ROTATION 1668

(May 6 to June 3, 1978)

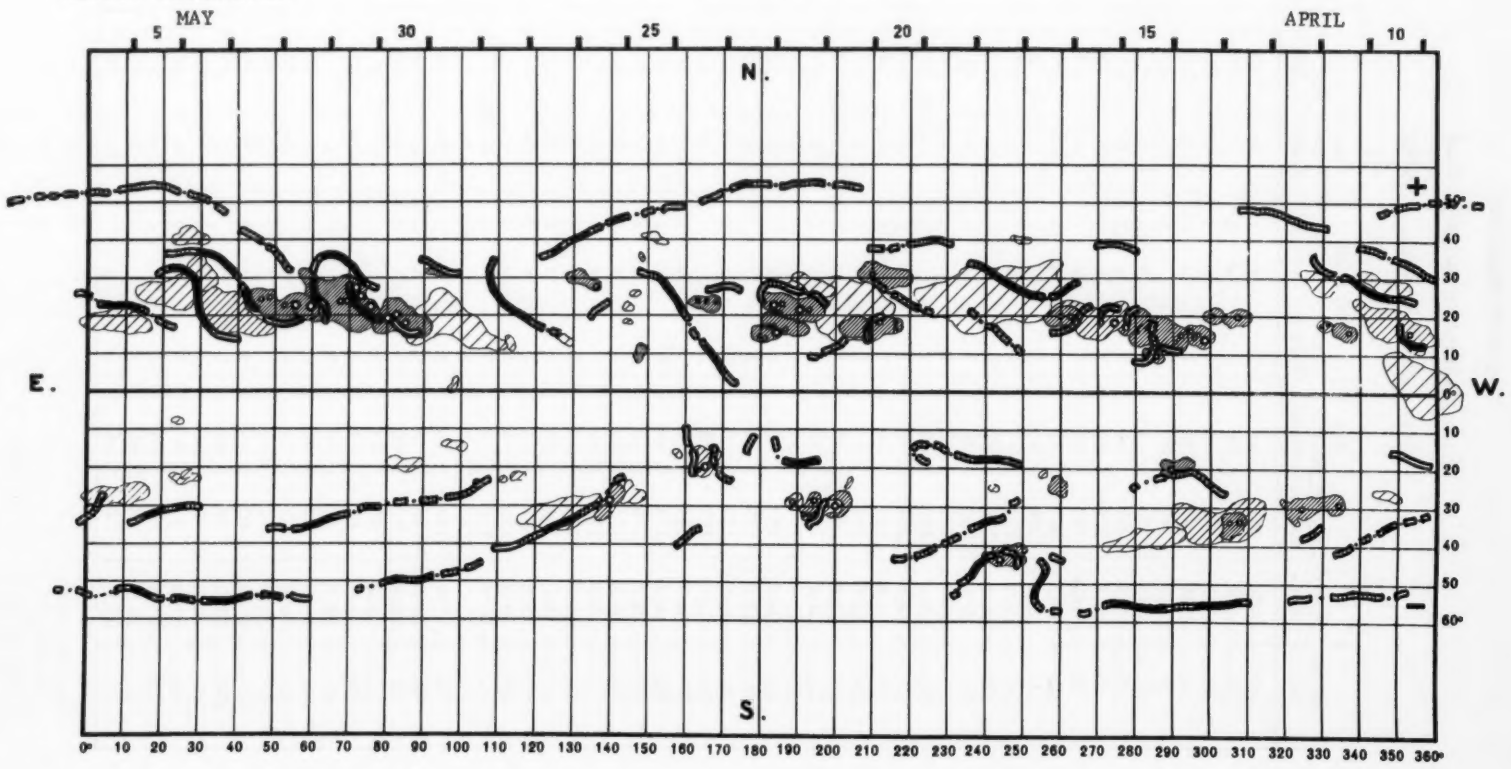
Region No.	Coordinates Lat.	Coordinates Long.	Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1667	Activity at West Limb
1	30°S	357°	>6	1	x		dispersed
2	17 N	355	>6	1	x		dispersed
3	17 N	348	>6	2			decreasing
4	22 N	347	>6	1	x		dispersed
5	26 S	347	>6	3			decreasing
6	17 N	333	-3	1	x		decreasing
7	18 S	331	>6	1	x		disappeared
8	29 S	325	>6	1	x		dispersed
9	14 S	313	+3	1	x		stable
10	36 S	305	+5	1	x		dispersed
11	20 N	304	>6	1	x		dispersed
12	19 S	299	+2	1	x		dispersed
13	24 S	296	-2	1	x		increasing
14	16 N	295	>6	2			decreasing
15	33 S	291	>6	1	x		dispersed
16	17 N	283	>6	3		(13)	decreasing
17	36 N	281	-4	1	x		stable
18	18 N	271	>6	1	x		decreasing
19	33 S	267	+2	1	x		disappeared
20	20 N	260	>6	1	x	(18)	decreasing
21	20 S	257	>6	3			stable
22	21 N	214	>6	3			decreasing
23	16 N	203	+2	1	x		stable
24	27 S	195	>6	2			decreasing
25	19 N	194	>6	1	x		decreasing
26	11 N	191	>6	2			decreasing
27	16 N	184	>6	1	x		decreasing
28	24 N	179	>6	1	x		decreasing
29	19 S	176	-6	1	x		(?)
30	16 N	174	>6	1	x		decreasing
31	18 S	171	+4	1	x		disappeared
32	14 S	158	+3	1	x		disappeared
33	31 S	151	+1	1	x		disappeared
34	15 S	141	-1	1	x		dispersed
35	28 N	131	-1	1	x		decreasing
36	30 S	131	>6	2		(39)	decreasing
37	23 S	115	-3	2			increasing
38	17 S	111	+5	2			decreasing
39	18 N	96	>6	1	x		dispersed
40	23 N	92	>6	3			decreasing
41	35 N	87	-3	2			decreasing
42	16 S	81	+2	2			stable
43	18 N	80	>6	5			decreasing
44	19 N	63	>6	1	x		decreasing
45	16 S	61	0	2			decreasing
46	26 S	61	-5	1	x		(?)
47	26 N	60	>6	3			decreasing
48	18 S	49	+2	1	x		stable
49	18 N	40	>6	3			decreasing
50	22 N	37	>6	3			decreasing
51	23 S	23	+6	2			decreasing
52	26 S	8	+1	3			increasing
53	28 S	2	>6	1	x		dispersed

SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1667

APRIL 9 TO MAY 6, 1978

MEUDON OBSERVATORY

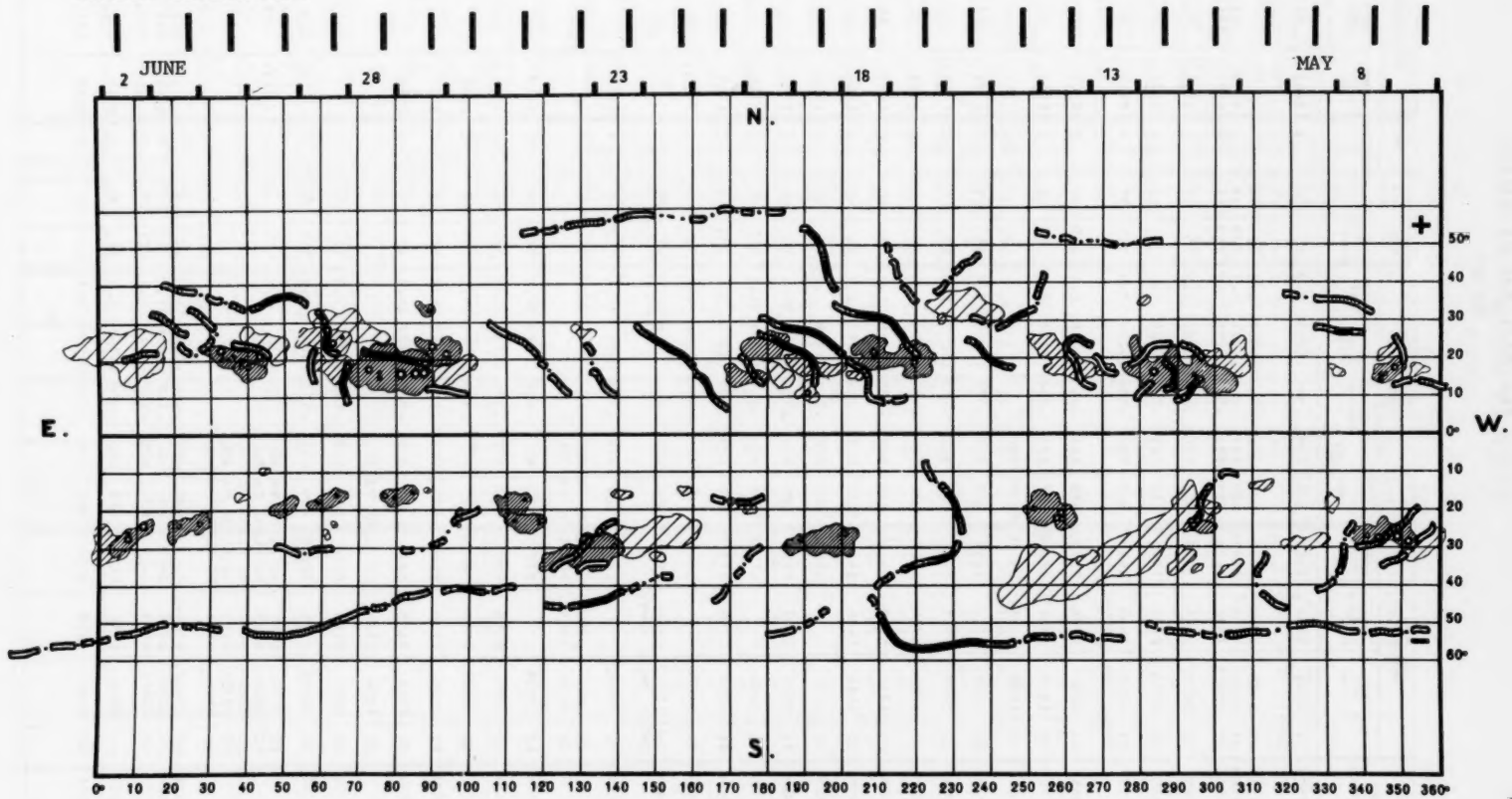


SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1668

MAY 6 TO JUNE 3, 1978

MEUDON OBSERVATORY



7 May 78

Hα SOLAR FLARES

MAY 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	MAY																
144 TACH	01	0441	0445	0458	S28	E89	.999	15280	7.9	17	?F		C	0445	88		D Y5
	IMP.1 NO	CULG1															
GRP67145	01	0538	0540	0620	N29	E01	.548	15266	1.3	42	-N						J
TACH	01	0538	0540	0600D	N29	E01	.548	15266	1.3	22D	-N		C	0540	88	.9	E
ABST	01	0552E	0552	0620	N29	E01	.548	15266	1.3	28D	-F		P	0552	131	1.6	DJ
146 ABST	01	0610	0614	0636	N26	E26	.634	15266	3.2	26	-F		C	0614	79	1.0	DJ Y5
147 ABST	01	0629	0631	0635	N18	E01	.378	15266	1.3	6	-F		C	0631	96	1.1	DJ Y5
148 ABST	01	0637	0645	0654	S27	E88	.998	15280	7.9	17	?F		P	0645	61		ADJ Y5
	IMP.1 NO	CULG1															
149 ABST	01	0751	0755	0809D	N29	E01	.548	15266	1.4	18D	-F		P	0755	114	1.4	DJ Y5
150 ABST	01	0800	0804	0809D	S27	E88	.998	15280	7.9	9D	1F		P	0804	87		ADJ Y5
	01	0952	1051	NO FLARE PATROL													
151 MCMA	01	1109	1120	1150	N29	E12	.576	15266	2.4	41	-N		C	1120	100	1.3	E Y5
152 MCMA	01	1307	1311	1322	N24	W02	.473	15266	1.4	15	-F		C	1311	35	.4	D Y5
153 MCMA	01	1323	1324	1330	N21	E14	.480	15266	2.6	7	-F		C	1324	30	.4	D Y5
154 MCMA	01	1332	1340	1400D	N18	W05	.386	15266	1.2	28D	-F		C	1340	30	.3	E Y5
155 MCMA	01	1404	1406	1430	N32	E12	.615	15266	2.5	26	-B		C	1406	40	.5	D Y5
156 MCMA	01	1455		1520	N26	W06	.511	15266	1.2	25	-N		C	1501	50	.6	E Y5
157 MCMA	01	1541	1543	1551	S28	W74	.961	15252	26.1	10	-F		C	1543			D Y5
158 MCMA	01	1646		1710D	S29	W74	.961	15252	26.1	24D	-F		C	1705			E Y5
159 MCMA	01	1714	1715	1737D	N34	E23	.694	15266	3.4	23D	-B		C	1715	35	.4	E Y5
160 MCMA	01	1727E		1747	N22	W08	.459	15266	1.1	20D	-B		C	1733	100	1.1	Y5
161 PALE	01	1739	1743	1826	N16	W72	.961	0	26.3	47	?B	3	C		167		Y5
	IMP.1 NO	RAMY2															
162 MCMA	01	1759E		1804D	S29	W74	.961	15252	26.2	5D	-F		P	1759			D Y5
	01	1807	1820	NO FLARE PATROL													
	01	1834	1849	NO FLARE PATROL													
163 MCMA	01	1910E		2230	N21	W12	.466	15266	30.9	200D	2B		C	1953	450	5.2	UXYZ Y5
164 MCMA	01	1955	1958	2030	S29	W77	.973	15252	26.1	35	-N		C	1958			E Y5
165 MCMA	01	2045E	2046	2050D	S29	W77	.973	15252	26.1	5D	-N		C	2046			E Y5
166 MCMA	01	2134	2138	2146	S29	W78	.976	15252	26.0	12	-N		C	2138			D Y5
167 MCMA	01	2148	2155	2201	S29	W78	.976	15252	26.1	13	-F		C	2155			E Y5
	02	0026	0031	NO FLARE PATROL													
168 MANI	02	0048	0050	0100	N26	E03	.503	15266	2.3	12	-N	3	V		100	1.1	F Y5
169 MANI	02	0118E	0120	0209D	N26	E03	.503	15266	2.3	51D	-N	3	V		150	1.7	F Y5
	02	0159	0209	NO FLARE PATROL													
	02	0212	0219	NO FLARE PATROL													
	02	0221	0230	NO FLARE PATROL													
	02	0233	0251	NO FLARE PATROL													
	02	0306	0310	NO FLARE PATROL													
GRP67170	02	0345E	0345+4	0413	N30	W05	.565	15266	1.8	28	1N				300	3.6	LU
TACH	02	0345E	0345	0413	N30	W06	.567	15266	1.7	28D	1B		P	0345	398	4.9	ELU
MANI	02	0347E	0349	0409D	N30	W05	.565	15266	1.8	22D	1N	3	V		210	2.6	FU
171 ABST	02	0514	0516	0530	N25	E01	.486	15266	2.3	16	-F		C	0516	131	1.5	EJ Y5
172 ABST	02	0606	0609	0616	N35	E19	.682	15266	3.7	10	-F		C	0609	131	1.8	DJ Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	MAY																	
GRP67173	02	0614	0616+0	0625	S26	E78	.976	15280	8.1	11	-N						DJ	
ABST	02	0614	0616	0626	S25	E80	.982	15280	8.3	12	1N		C	0616	87		DJ	
MANI	02	0616E	0616U	0623	S27	E76	.969	15280	8.0	7D	-N	3	V		30	.7		
GRP67174	02	0635+3	0640+1	0710	N29	W12	.574	15266	1.4	35	1B				340	4.1	FJ	
CATA	02	0635E	0640	0710D	N29	W13	.579	15266	1.3	35D	1B	2		0640	337	4.2		
ABST	02	0638	0641	0722	N28	W12	.561	15266	1.4	44	1B		C	0641	393	4.6	FJ	
MANI	02	0639E	0640	0709	N30	W10	.579	15266	1.5	30D	-B	3	V		150	1.8	F	
175 ABST	02	0716	0721	0726	S26	E75	.965	15280	7.9	10	?F		C	0721	79		DJ	Y5
	IMP.1 NO † CATA1																	
	02	1040	1048	NO FLARE PATROL														
176 MCMA	02	1050E		1155D	N25	W04	.490	15266	2.2	65D	-N		C	1055	50	.6	E	Y5
177 MCMA	02	1130	1146	1203	S29	W85	.994	15252	26.1	33	-N		C	1146			E	Y5
GRP67178	02	1200	1220+1	1305	N24	W02	.472	15266	2.3	65	-N				100	1.1	E	
MCMA	02	1200	1221	1305	N25	W03	.488	15266	2.3	65	-B		C	1221	90	1.1	E	
KHAR	02	1213E	1220	1230D	N24	W02	.472	15266	2.4	17D	-F		P	1220	110	1.3	E	
179 MCMA	02	1307	1308	1313	S29	W85	.994	15252	26.2	6	-B		C	1308			E	Y5
180 MCMA	02	1330	1340	1355D	N25	W05	.492	15266	2.2	25D	-N		C	1340	40	.5	E	Y5
181 MCMA	02	1420	1424	1429	N16	E72	.961	15282	8.0	9	-F		C	1424	20	.6	D	Y5
182 MCMA	02	1432	1439	1445	S29	W86	.995	15252	26.2	13	-N		C	1439			D	Y5
183 MCMA	02	1610	1612	1615	S27	E72	.952	15280	8.1	5	-B		C	1612	40	1.4	EV1611	Y5
184 MCMA	02	1815	1830	1930	N28	E24	.637	15270	4.6	75	-F		C	1830	60	.8	E	Y5
185 MCMA	02	2003	2012	2045	N15	E68	.940	15282	7.9	42	-N		C	2012	20	.6	D	Y5
186 MCMA	02	2205	2208	2215	N22	E03	.442	15266	3.1	10	-F		C	2208	25	.3	D	Y5
GRP67187	02	2307	2314+1	2332	N26	W07	.513	15266	2.4	25	-N				120	1.4		
VORO	02	2307	2315	2337	N26	W08	.516	15266	2.4	30	-B		C	2315	161	1.9	E	
MANI	02	2314E	2314U	2326	N26	W07	.513	15266	2.4	12D	-N	3	P		80	.9	F	
188 VORO	02	2315	2322	2329	N15	E65	.921	15282	7.8	14	-N		C	2322	81		DH	Y5
189 VORO	02	2315	2323	2336	S31	W90	.999	15252	26.2	21	?F		C	2323	108		DH	Y5
	IMP.1 NO † CULG1																	
190 VORO	03	0007	0008	0015	N21	W20	.526	15266	1.5	8	-B		C	0008	125	1.5	E	Y5
GRP67191	03	0118+4	0125+3	0148	S32	W90	.999	15252	26.3	30	1B						H	
VORO	03	0118	0125	0134D	S32	W90	.999	15252	26.3	16D	2N		C	0125	206		H	
MANI	03	0122	0128	0148	S32	W90	.999	15252	26.3	26	1B	3	P					
	03	0331	0352	NO FLARE PATROL														
	03	0355	0418	NO FLARE PATROL														
	03	0450	0500	NO FLARE PATROL														
192 KANZ	03	0625E		0649D	S31	W86	.995	15252	26.8	24D	-F	1						Y5
GRP67193	03	0731E	0815+7 1001	1009D	S31	W86	.995	15252	26.9	15B	1F							
KANZ	03	0731E		1045D	S31	W86	.995	15252	26.9	194D	-F	*						
MONT	03	0749E	0822	0931D	S31	W86	.995	15252	26.9	103D	-N		C	0822	110			
CATA	03	0805E	0815	0830D	S36	W90	.999	15252	26.6	25D	2F	2		0815	168			
MONT	03	0957	1001	1009	S31	W86	.995	15252	27.0	12	-N	*	C	1001	50		D	
194 KANZ	03	0842		0930	N15	E58	.870	15282	7.7	48	-F	1						Y5
GRP67195	03	0954>9	1044	1049	N15	E58	.870	15282	7.8	55	-F							
KANZ	03	0954		1045	N15	E58	.870	15282	7.8	51	-F	1						
ZURI	03	1040	1044	1052	N16	E59	.880	15282	7.9	12	-F		C	1044	60	1.3		
196 MCMA	03	1126	1128	1135	S29	W90	.999	15252	26.7	9	-N		C	1128				Y5
197 ZURI	03	1130	1146	1202	N16	E58	.872	15282	7.8	32	-F		C	1146	60	1.3		Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	MAY																	
GRP67198	03	1226+2	1230+0	1242	N22	W27	.603	15266	1.5	16	-F				100	1.3	E	
MCMA	03	1211E		1245D	N29	W28	.676	15266	1.4	34D	-N		C	1220	45	.6	E	
ZURI	03	1226	1230	1238	N22	W26	.593	15266	1.6	12	-F		C	1230	100	1.3		
MCMA	03	1228	1230	1242	N22	W27	.603	15266	1.5	14	-N		C	1230	100	1.4	E	
199 MCMA	03	1346	1348	1410	S33	W90	.999	15252	26.8	24	-F		C	1348				Y5
GRP67200	03	1355+5	1412 1418+2	1445	N23	W22	.566	15266	1.9	50	-N				140	1.7	EK	
MCMA	03	1355	1420	1455D	N23	W23	.575	15266	1.9	60D	1N		C	1420	160	2.1	EK	
ZURI	03	1400	1412	1430	N25	W16	.543	15266	2.4	30	-N		C	1412	110	1.4		
ZURI	03	1418	1418	1434	N22	W27	.603	15266	1.6	16	-N		C	1418	130	1.7		
201 MCMA	03	1411	1413	1418	N15	E57	.862	15282	7.9	7	-N		C	1413	30	.6	D	Y5
GRP67202	03	1435+1	1441+1	1448	S31	W90	.999	15252	26.9	13	-F							
MCMA	03	1435	1442	1447	S32	W90	.999	15252	26.9	12	-F		C	1442				
KANZ	03	1436	1441	1448	S31	W90	.999	15252	26.9	12	-F	1						
GRP67203	03	1500+4	1505+5	1655D	N21	W33	.654	15266	1.2	115	-N				80	1.0	EK	
KANZ	03	1500	1506	1529D	N21	W33	.654	15266	1.2	29D	-N	2						
MCMA	03	1500	1505	1655D	N20	W33	.647	15266	1.2	115D	-N		C	1505	80	1.1	EK	
ZURI	03	1504	1510	1512D	N21	W33	.654	15266	1.2	8D	-N		P	1510	90	1.3		
204 MCMA	03	1628	1628	1639	N24	W18	.545	15266	2.3	11	-N		C	1628	20	.3	D	Y5
GRP67205	03	1654+1	1700+3	1735	N29	W31	.700	15266	1.4	41	1B						F	
KANZ	03	1654	1703	1710D	N29	W31	.700	15266	1.4	16D	1B	2						
MCMA	03	1655	1700	1735	N29	W31	.700	15266	1.4	40	1B		C	1700	250	3.6	F	
206 MCMA	03	1815	1820	1842	N25	W25	.613	15266	1.9	27	-N		C	1820	60	.8	D	Y5
207 MCMA	03	1847	1855	2015D	N23	W27	.612	15266	1.8	88D	-N		C	1855	110	1.4	FK	Y5
208 MCMA	03	2020	2023	2056	N26	W20	.584	15266	2.3	36	-B		C	2023	120	1.5	E	Y5
209 MANI	03	2243E	2243	2252	N20	W40	.720	15266	30.9	9D	-F	3	V		20	.3		Y5
210 MANI	03	2243E	2244	2302	N24	W20	.561	15266	2.4	19D	-N	3	V		80	1.0	F	Y5
GRP67211	04	0140>9	0150+2	0209	N24	W23	.584	15266	2.3	29	1N				280	3.4		
VORO	04	0140	0153	0220	N24	W24	.593	15266	2.3	40	1N		C	0150	305	3.8	E	
MANI	04	0150	0152	0158	N25	W23	.595	15266	2.4	8	1N	3	V		250	3.2	F	
212 MANI	04 IMP-1 NO	0259	0302 CULG1	0309D PALE1	N20	W40	.719	15266	1.1	10D	PN	3	V		150	2.2	F	Y5
GRP67213	04	0637	0640+2	0708	N21	W24	.563	15266	2.5	31	1N							
ABST	04	0637	0640	0708	N21	W24	.563	15266	2.5	31	1F		C	0640	262	3.3	E	
MANI	04	0638E	0642	0705D	N20	W27	.583	15266	2.3	27D	-N	3	V		150	1.9	F	
BUCA	04	0639E		0655D	N21	W24	.563	15266	2.5	16D	1N		C	0640	429	5.1	C	
214 MONT	04	0952E	1003	1027	N20	W43	.749	15266	1.2	35D	-N		C	1003	110		E	Y5
215 CATA	04	0955E	1000	1005	N23	W24	.583	15266	2.6	10D	-N	2		1000	84	1.0		Y5
216 KIEV	04	1206	1212	1240	N22	W48	.805	15266	30.9	34	-F		C	1212	100	1.7	DI	Y5
217 KANZ	04	1233	1245	1304	N18	E47	.783	15282	8.0	31	-F	1						Y5
GRP67218	04	1250>9	1258 1309+2	1337	N27	W30	.674	15266	2.3	47	1N						EI	
KIEV	04	1250	1258	1320	N29	W29	.683	15266	2.4	30	-F		C	1258	150	2.0	EI	
KANZ	04	1258	1309	1337	N27	W30	.674	15266	2.3	39	1B	2					F	
LVOV	04	1304	1311	1347	N27	W30	.674	15266	2.3	43	1F		C	1311	150	2.1	E	
219 KANZ	04	1258	1307	1325	N19	W51	.821	15266	30.7	27	-N	1						Y5
	04	1510	1529	NO FLARE PATROL														
220 KANZ	04	1541	1546	1552	N19	E43	.744	15282	7.9	11	-B	1					E	Y5
221 KANZ	04	1616	1623	1638	N19	W54	.846	15266	30.6	22	-N	1						Y5
	05	0015	0022	NO FLARE PATROL														
	05	0105	0110	NO FLARE PATROL														

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS		MEASUREMENTS			REMARKS	
					APPROX													
	DATE MAY	START	MAX. PHASE	END	LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
222 MANI	05	0338	0344	0401D	N18	W60	.891	15266	30.7	23D	-F	3	P		40	.8		Y5
223 ABST	05	0547E	0548	0554D	N15	E36	.647	15282	7.9	7D	-F		P	0548	87	1.2	DJ	Y5
224 CATA	05	0915E	0915	0930D	N20	E90	1.000	15291	12.1	15D	?N	2		0915	84			Y5
	IMP.1 NO : ZURI2																	
225 ZURI	05	1028	1030	1032D	N28	W54	.873	15266	1.4	4D	1B		P	1030	290	6.0		Y5
	05	1045	1053	NO FLARE PATROL														
	05	1419	1433	NO FLARE PATROL														
	05	1445	1446	NO FLARE PATROL														
	05	1454	1455	NO FLARE PATROL														
226 ZURI	05	1537	1539	1547D	N18	W64	.918	15266	30.9	10D	1F		P	1539	160			Y5
	05	1547	1657	NO FLARE PATROL														
	05	1843	1924	NO FLARE PATROL														
	05	2045	2117	NO FLARE PATROL														
227 VORO	05	2138	2142	2147	N20	W77	.982	15266	30.1	9	-B		C	2142	54		HJ	Y5
228 VORO	05	2159	2206	2218	N29	W61	.920	15266	1.3	19	?B		C	2206	116	2.9	EHJ	Y5
	IMP.1 NO : CULG1																	
229 VORO	05	2224	2225	2230	N17	E85	.998	15291	12.3	6	-N		C	2225	27		DH	Y5
	06	0149	0221	NO FLARE PATROL														
	06	0223	0229	NO FLARE PATROL														
	06	0231	0305	NO FLARE PATROL														
230 KHAR	06	0953E		0958D	N23	W50	.825	15266	2.7	5D	-F		P	0954			DH	Y5
231 KHAR	06	1005E		1011D	N19	W85	.998	15266	30.0	6D	-F		P	1005			D	Y5
	06	1032	1040	NO FLARE PATROL														
232 RAMY	06	1140E	1146	1208D	N15	W80	.989	15266	30.5	28D	-N	3	C		35			Y5
233 RAMY	06	1214	1215	1225	S28	E26	.569	15280	8.5	11	-N	3	C		36		H	Y5
GRP67234	06	1225	1256 1310	1407	N18	W49	.798	15266	2.8	102	-B							
RAMY	06	1225	1256	1407	N18	W49	.798	15266	2.8	102	-F	3	C		39			
RAMY	06	1225	1310	1407	N18	W49	.798	15266	2.8	102	-B	3	C		44			
GRP67235	06	1255	1300 1306	1441	N16	W85	.998	15266	30.2	106	-B							
RAMY	06	1255	1306	1441	N15	W80	.989	15266	30.5	106	-B	3	C		39			
RAMY	06	1255	1300	1441	N15	W80	.989	15266	30.5	106	-F	3	C		53			
KHAR	06	1400E		1425D	N17	W90	1.000	15266	29.8	25D	1N		V					
236 RAMY	06	1501	1514	1520	N16	W78	.983	15266	30.8	19	-B	3	C		49			Y5
237 RAMY	06	1535	1543	1551	N19	W71	.958	15266	1.3	16	-B	3	C		27			Y5
	06	1607	1614	NO FLARE PATROL														
238 PALE	06	1638E	1644	1656	N16	W71	.956	15266	1.4	18D	-N	3	C		26		DE	Y5
GRP67239	06	1643+2	1645+2	1700	N19	W53	.837	15266	2.7	17	-N				40	.7		
RAMY	06	1643	1645	1658	N20	W51	.823	15266	2.9	15	-N	3	C		38		F	
PALE	06	1645	1647	1702	N19	W56	.862	15266	2.5	17	-B	3	C		43		DE	
240 RAMY	06	1702	1705	1713	N16	W78	.983	15266	30.9	11	-B	3	C		23			Y5
241 PALE	06	1738	1800	1826	N20	W57	.872	15266	2.5	48	-B	3	C		88		DE	Y5
242 RAMY	06	1739	1742U	1752	N17	W78	.984	15266	30.9	13	?B	3	C					Y5
	IMP.1 NO : PALE1																	
	06	1833	2230	NO FLARE PATROL														
	07	0312	0325	NO FLARE PATROL														
GRP67243	07	0327		0353	N23	W72	.966	15266	1.7	26	1N						FLOZ	
TACH	07	0327		0350	N22	W77	.983	15266	1.4	23	1N		V	0327	115		OL	
MANI	07	0336E	0336U	0355	N24	W68	.949	15266	2.1	19D	2N	3	P		250	5.6	FZ	

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Millionths of Disk	CORR AREA Sq. Deg.		
	MAY																	
244 CATA	07	0835	0835	0840	N17	W90	1.000	15266	30.6	5	-N	2		0835	28			Y5
GRP67245	07	0903>9	0915 0947+3	0955	N15	W90	1.000	15266	30.6	52	1N						H	
KHAR	07	0903E		0953D	N19	W90	1.000	15266	30.6	50D	1F		P	0935			H	
CATA	07	0915	0915	0935D	N16	W90	1.000	15266	30.6	20D	1N	2		0915	67			
KHAR	07	0943E	0947	0953D	N14	W90	1.000	15266	30.7	10D	-N		P					
CATA	07	0945E	0950	0955	N13	W90	1.000	15266	30.7	10D	1F	2		0950	56			
246 KHAR	07	0937E	0939	0947D	N30	W85	.999	15266	1.0	10D	-F		P	0939			DH	Y5
247 KHAR	07	1125E	1133	1143D	N18	W89	1.000	15266	30.8	18D	1F		P					Y5
	07	1222	1230	NO FLARE PATROL														
248 RAMY	07	1237	1241	1307	N18	W81	.992	15266	1.5	30	-B	3	C					Y5
249 RAMY	07	1318	1326	1346	N19	W67	.937	15266	2.5	28	-B	4	C		27			Y5
250 RAMY	07	1405	1413	1418	N19	W68	.943	15266	2.5	13	-B	4	C		21			Y5
251 RAMY	07	1425	1429	1433	N19	W68	.943	15266	2.5	8	-B	4	C		22			Y5
GRP67252	07	1435+2	1436+4	1445	N19	W88	1.000	15266	1.0	10	-N							
RAMY	07	1435	1439	1441	N18	W84	.997	15266	1.3	6	-E	4	C					
MCMA	07	1436	1436	1445	N20	W90	1.000	15266	30.9	9	-F		C	1436				
KANZ	07	1437	1440	1447	N19	W88	1.000	15266	1.0	10	-N	1						
GRP67253	07	1455+0	1459+2	1504	N22	W90	1.000	15266	30.9	9	-N							
KANZ	07	1455	1459	1503	N21	W90	1.000	15266	30.9	8	-B	1						
MCMA	07	1455	1501	1504	N24	W90	1.000	15266	30.9	9	-F		C	1501				
GRP67254	07	1510+2	1514	1522D	N22	W69	.951	15266	2.5	12	-N						D	
KANZ	07	1510	1513	1513D	N22	W69	.951	15266	2.5	3D	-N	1					D	
MCMA	07	1512	1514	1522D	N22	W70	.956	15266	2.4	10D	-N		C	1514			D	
255 RAMY	07	1531	1532	1539	N25	W80	.991	15266	1.6	8	-B	4	C					Y5
GRP67256	07	1544+8	1552 1612	1626	N20	W68	.944	15266	2.6	42	1N						EK	
RAMY	07	1544	1612	1627	N18	W66	.930	15266	2.7	43	1B	4	C		247		FDE	
RAMY	07	1544	1552	1627	N18	W66	.930	15266	2.7	43	-B	4	C		102		FDE	
MCMA	07	1552		1625	N22	W70	.956	15266	2.4	33	1N		P	1611	60	2.2	EK	
257 PALE	07	2124E	2126U	2128D	N17	W87	.999	15266	1.4	4D	-B	3	C				DE	Y5
258 PALE	07	2228	2229	2240	N21	W72	.964	15266	2.5	12	-N	3	C		39		F	Y5
	08	0052	0058	NO FLARE PATROL														
GRP67259	08	0752+1	0806+6	0823	N16	W06	.348	15282	7.9	31	-N				130	1.4	E	
MONT	08	0752	0812	0829	N16	W06	.348	15282	7.9	37	-N		C	0812	80		E	
KANZ	08	0753	0803	0823	N16	W06	.348	15282	7.9	30	-B	1						
ABST	08	0804	0806	0808D	N16	W07	.353	15282	7.8	4D	-N		P	0806	175	1.9	E	
TEHR	08	0809E	0813	0822	N17	W07	.368	15282	7.8	14D	-B	2	C		127		F	
GRP67260	08	1212+0	1216+0 1248	1312	N22	W76	.980	15266	2.8	60	1B						F	
RAMY	08	1212	1248U	1312	N22	W76	.980	15266	2.8	60	2B	4	C		115		F	
RAMY	08	1212	1216	1217D	N22	W76	.980	15266	2.8	5D	-B	4	V		45			
RAMY	08	1212	1216U	1312	N22	W76	.980	15266	2.8	60	-B	4	C		45		F	
GRP67261	08	1441	1447+1 1454	1502	N16	E44	.739	15291	11.9	21	-B						F	
RAMY	08	1441	1447	1502	N16	E46	.760	15291	12.1	21	-B	4	C		32		F	
RAMY	08	1441	1443	1502	N16	E43	.728	15291	11.8	21	-B	3	C		32			
RAMY	08	1441	1454	1502	N16	E43	.728	15291	11.8	21	-F	3	C		10			
GRP67262	08	1739	1741	1750	N17	E56	.857	15291	12.9	11	-B				60	1.1		
RAMY	08	1739	1741	1752	N18	E57	.867	15291	13.0	13	-B	3	C		63			
PALE	08	1744E	1744U	1748	N16	E55	.846	15291	12.9	4D	-B	3	C		58		DE	
263 PALE	08	2044E	2044U	2101D	N16	E53	.828	15291	12.8	17D	-B	3	C		30		DE	Y5
	09	0105	0128	NO FLARE PATROL														
	09	0140	0150	NO FLARE PATROL														

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	MAY																
264 ABST	09	0747	0750	0759	N16	E36	.650	15291	12.0	12	-F		C	0750	96	1.2	D Y5
GRP67265	09	0935>9	1010	1035	N24	W90	1.000	15266	2.6	60	-F						
KHAR	09	0935E		1020D	N24	W90	1.000	15266	2.6	45D	1F		V				
CATA	09	1005	1010	1035	N24	W90	1.000	15266	2.7	30	-F	2		1010	28		
GRP67266	09	1442+0	1442+1	1509	N21	W90	1.000	15266	2.9	27	1N						
RAMY	09	1442	1443	1508	N22	W90	1.000	15266	2.9	26	1B	4	C				
HERS	09	1442E	1442	1510	N21	W90	1.000	15266	2.9	28D	1N		P				
	10	0417	0423	NO FLARE PATROL													
	10	1057	1101	NO FLARE PATROL													
	10	1205	1335	NO FLARE PATROL													
	10	1339	1347	NO FLARE PATROL													
	10	1359	1419	NO FLARE PATROL													
	10	1436	1542	NO FLARE PATROL													
	10	1558	1622	NO FLARE PATROL													
	10	1625	1639	NO FLARE PATROL													
	10	2113	2157	NO FLARE PATROL													
GRP67267	10	2157+0	2204+0 2210+5	2240	N19	E40	.709	15294	13.9	43	1B				220	3.1	U
PALE	10	2157E	2204U	2245D	N20	E40	.715	15294	13.9	48D	1B	3	C		216		U F
PALE	10	2157	2204U	2207D	N19	E43	.741	15294	14.1	10D	1B	3	V		216		FDE
PALE	10	2157E	2215U	2245D	N20	E40	.715	15294	13.9	48D	1N	3	C		221		U F
MANI	10	2210E	2210U	2235	N17	E38	.677	15294	13.8	25D	1F	3	V		150	2.1	U
	10	2159	2204	NO FLARE PATROL													
	10	2206	2210	NO FLARE PATROL													
	11	0045	0050	NO FLARE PATROL													
GRP67268	11	0249+0	0251+0 0300+0	0328	N20	E38	.693	15294	14.0	39	2B				510	7.0	FU
PALE	11	0249	0309	0338	N20	E38	.693	15294	14.0	49	1F	3	C		314		U F
PALE	11	0249	0251	0338	N20	E38	.693	15294	14.0	49	-B	3	C		120		UF
PALE	11	0249	0251	0258D	N20	E38	.693	15294	14.0	9D	-B	3	V		120		U F
TEHR	11	0254E	0300	0318	N20	E38	.693	15294	14.0	24D	1B	1	C		509		U F
TEHR	11	0254E	0300	0305D	N20	E38	.693	15294	14.0	11D	1B	1	V		509		U F
	11	1527	1721	NO FLARE PATROL													
269 RAMY	11	1532	1533	1538	N17	E13	.405	15291	12.6	6	-N	3	C		40		F Y5
	11	1731	2021	NO FLARE PATROL													
GRP67270	11	2114+1	2116+2 2135	2143	N19	E31	.611	15294	14.2	29	-B				70	.9	EGJ
PALE	11	2114	2116	2142	N19	E30	.600	15294	14.1	28	-B	3	C		51		DE
VORO	11	2115	2118	2124	N20	E34	.651	15294	14.4	9	-B		C	2118	99	1.3	EG
VORO	11	2131	2135	2143	N18	E32	.615	15294	14.3	12	-N		C	2135	99	1.2	EGJ
GRP67271	11	2145+2	2153+1	2204	N19	E31	.611	15294	14.2	19	-N				70	.9	EG
PALE	11	2145	2153	2204	N19	E29	.589	15294	14.1	19	-N	3	C		57		DE
VORO	11	2147	2154	2204	N20	E34	.651	15294	14.5	17	-N		C	2154	81	1.0	EG
GRP67272	11	2330+0	2333+2	0001	N20	W01	.393	15291	11.9	31	1B				380	4.1	J
MANI	11	2330E	2335	2350	N18	W04	.366	15291	11.7	20D	1N	3	P		200	2.2	FE
VORO	11	2330	2333	0001	N19	E01	.377	15291	12.1	31	1N		C	2333	421	4.6	EJ
PALE	11	2330	2334	2341D	N20	W01	.393	15291	11.9	11D	1B	3	C		413		FDE
PALE	11	2330	2334	2341D	N20	W01	.393	15291	11.9	11D	1B	3	V		413		FDE
MITK	11	2339		0015	N20	E00	.393	15291	12.0	36	1B		P	2339	310	3.5	E
	12	0120	0121	NO FLARE PATROL													
	12	0123	0136	NO FLARE PATROL													
	12	0138	0147	NO FLARE PATROL													
273 ABST	12	0651	0657	0702	S31	W02	.470	15293	12.1	11	-F		C	0657	175	2.0	DG Y5
	12	1300	1301	NO FLARE PATROL													
274 RAMY	12	1851	1852	1852D	N23	E18	.521	15294	14.1	1D	-B	2	C		44		F Y5
	13	0130	0147	NO FLARE PATROL													

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE MAY	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
GRP67275	13	0742+1	0744 0751	0843	S28	W70	.946	15280	8.1	61	1B						F	
MANI	13	0742	0744	0747D	S26	W73	.959	15280	7.8	5D	-N	3	P		80	1.8		
TEHR	13	0743	0751	0841	S28	W70	.946	15280	8.1	58	1B	1	C		350		F	
CATA	13	0745E	0745	0845D	S30	W64	.915	15280	8.5	60D	1B	2		0745	224			
276 TEHR	13 IMP+1	0743 NO	0751 CATA1	0806D	N22	E60	.896	15298	17.8	23D	?B	1	V		350		F	Y5
277 CATA	13	0805	0805	0820	N19	E09	.401	15294	14.0	15	-B	2		0805	84	.9		Y5
278 CATA	13	0910	0920	0950D	N16	E42	.715		16.5	40D	-B	2		0920	56	.8		Y5
279 RAMY	13	1118	1137	1212D	N22	E57	.874	15298	17.7	54D	-N	3	C		26			Y5
280 RAMY	13	1307	1308	1317	S19	E16	.382	15296	14.7	10	-B	3	C		21			Y5
281 RAMY	13	1836	1838	1840	N13	W21	.442	15291	12.2	4	-N	3	C		61			Y5
282 PALE	13	2057	2138	2231D	N22	E55	.859	15298	18.0	94D	-N	3	C		31		DE	Y5
283 PALE	14	0001	0038	0055	N22	E52	.834	15298	17.9	54	-B	3	C		40		DE	Y5
GRP67284	14	1116+0	1117+1 1138	1144	N18	E68	.940	15300	19.6	28	1N				100		F	
RAMY	14	1116	1117	1152	N19	E70	.952	15300	19.7	36	1N	3	C		110		F	
RAMY	14	1116	1117	1124D	N19	E70	.952	15300	19.7	8D	1N	3	V		110		F	
RAMY	14	1116	1138	1152	N19	E70	.952	15300	19.7	36	-F	3	C		30		F	
TEHR	14	1117E	1118	1135	N18	E67	.934	15300	19.5	18D	-B	2	C		96		F	
TEHR	14	1117E	1118	1122D	N18	E67	.934	15300	19.5	5D	-B	2	V		96		F	
GRP67285	14	1129+2	1131+2	1150	S18	E09	.302	15296	15.2	21	-B				130	1.4	F	
RAMY	14	1129	1131	1150	S20	E04	.303	15296	14.8	21	-B	3	C		53		F	
TEHR	14	1131	1133	1149	S18	E09	.302	15296	15.2	18	-B	2	C		127		F	
TEHR	14	1131	1133	1137D	S18	E09	.302	15296	15.2	6D	-B	2	V		127		F	
GRP67286	14	1251+3	1253+3	1304	N20	E43	.743	15298	17.8	13	-N				120	1.8	F	
RAMY	14	1251	1253	1303	N20	E45	.763	15298	17.9	12	-B	3	C		80		F	
TEHR	14	1254	1256	1304	N21	E41	.727	15298	17.6	10	-N	2	C		159		F	
287 RAMY	14	1354E	1355	1402	S28	W82	.989	15280	8.4	8D	-B	3	C				F	Y5
GRP67288	14	1611+0	1612+1	1623	S20	E01	.296	15296	14.7	12	-B				70	.7	F	
RAMY	14	1611	1612	1623	S20	E01	.296	15296	14.7	12	-B	3	C		82		F	
RAMY	14	1611	1613	1617D	S20	E01	.296	15296	14.7	6D	-B	3	V		58		F	
GRP67289	14	2139+1	2141+0	2154	S26	E59	.875	15301	19.3	15	-B				50	1.1	FU	
PALE	14	2139	2141	2155D	S27	E60	.884	15301	19.4	16D	-B	3	C		35		U F	
RAMY	14	2140	2141	2152	S26	E58	.868	15301	19.3	12	-B	3	C		56		F	
	15	0802	0844	NO FLARE PATROL														
	15	0847	1003	NO FLARE PATROL														
	15	1008	2215	NO FLARE PATROL														
290 RAMY	15	1606	1610	1618	N21	E33	.644	15298	18.1	12	-B	4	C		62		F	Y5
291 PALE	15	2220	2227	2234	S27	E46	.769	15301	19.4	14	-B	3	C		50		FDE	Y5
292 VORO	15	2317	2321	2329	N22	E29	.610	15298	18.1	12	-N		C	2321	125	1.6	E	Y5
293 VORO	16	0057	0057	0100	N22	E27	.588	15298	18.1	3	-N		C	0057	63	.7	D	Y5
GRP67294	16	0215+3	0228	0239	N23	E56	.868	15300	20.3	24	-F				90	1.8	J	
HITK	16	0215		0239D	N24	E57	.878	15300	20.4	24D	-F		C	0228	70			
VORO	16	0218	0228	0239	N23	E55	.860	15300	20.2	21	1F		C	0228	116	2.2	J	
GRP67295	16	0446+8	0447 0457	0504	S18	W19	.410	15296	14.8	18	1N						E	
TACH	16	0446	0447	0505	S19	W18	.408	15296	14.8	19	1N		C	0447	220	2.5	E	
TEHR	16	0454	0457	0502	S18	W20	.422	15296	14.7	8	1B	2	C		222			
296 ABST	16	0524E	0526	0542D	N23	E80	.990		22.2	18D	-F		P	0526	87		AD	Y5
297 ZURI	16	1029E	1029	1035D	S19	W21	.443	15296	14.9	6D	-F		P	1029	80	.9		Y5
	16	1045	1047	NO FLARE PATROL														

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONF	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	MAY																	
298 RAMY	16	1234	1240	1254	S20	W23	.476	15296	14.8	20	-B	4	C		94			Y5
GRP67299	16	1607>9	1625>9 1640	1704	N16	W56	.851	15291	12.5	57	1B				230	4.4		
KANZ	16	1607	1625	1658	N18	W58	.872	15291	12.3	51	1B	2						
KANZ	16	1607	1640	1658	N18	W58	.872	15291	12.3	51	1N	2						
RAMY	16	1626E	1630U	1656D	N15	W56	.849	15291	12.5	30D	1B	3	C		301			
RAMY	16	1626	1630U	1632D	N15	W56	.849	15291	12.5	6D	1B	3	V		301			
PALE	16	1634E	1635U	1642D	N16	W56	.851	15291	12.5	8D	1B	3	V		159		FDE	
PALE	16	1634E	1635U	1710	N16	W56	.851	15291	12.5	36D	1B	3	C		159		FDE	
GRP67300	16	1706+0	1708+1	1721	N19	E18	.468	15298	18.1	15	-N						FU	
KANZ	16	1706	1709	1719	N19	E18	.468	15298	18.1	13	-N	1						
PALE	16	1706	1708	1722	N19	E19	.478	15298	18.1	16	-N	3	C		61		U F	
	16	1728	1846	NO FLARE PATROL														
GRP67301	16	1758+0	1801+6	1836	N20	E15	.453	15298	17.9	38	-N				110	1.2		
PALE	16	1758	1801	1836	N20	E15	.453	15298	17.9	38	-B	3	C		124		FDE	
PALE	16	1758	1807	1836	N20	E15	.453	15298	17.9	38	-F	3	V		112			
GRP67302	16	1852+6	1858+3 1908	1910	S20	W27	.524	15296	14.8	18	-N				50	.6	E	
MCMA	16	1852	1908	1915D	S19	W28	.529	15296	14.7	23D	-F		C	1908	60	.7	E	
PALE	16	1856	1858	1910	S21	W27	.531	15296	14.8	14	-N	3	C		36		DE	
RAMY	16	1858	1901	1909	S20	W26	.512	15296	14.8	11	-E	3	C		67			
	16	1915	2025	NO FLARE PATROL														
303 MCMA	16	2025E		2026D	N26	E17	.544	15298	18.1	1D	-F		P	2026	40	.5	E	Y5
	16	2026	2213	NO FLARE PATROL														
304 MANI	16	2300E	2302	2309D	S21	W27	.531	15296	14.9	9D	-N	3	V		150	1.8		Y5
	17	0114	0123	NO FLARE PATROL														
	17	0127	0129	NO FLARE PATROL														
	17	0150	0208	NO FLARE PATROL														
	17	0210	0240	NO FLARE PATROL														
	17	1147	1203	NO FLARE PATROL														
GRP67305	17	1233	1237 1327	1342	S26	W84	.994	15292	11.2	69	-B							
RAMY	17	1233	1237	1342	S26	W84	.994	15292	11.2	69	-B	4	C		24			
RAMY	17	1233	1327	1342	S26	W84	.994	15292	11.2	69	-F	4	C		7			
	17	1426	1433	NO FLARE PATROL														
306 MCMA	17	1434		1439D	S18	W38	.648	15296	14.8	5D	-F		C	1438	15	.2	DL	Y5
GRP67307	17	1450	1454	1511	S15	W39	.649	15296	14.7	21	-F				60	.8	EL	
ZURI	17	1450	1454	1458	S13	W41	.668	15296	14.5	8	-F		C	1454	70	1.0		
MCMA	17	1453E		1523D	S18	W38	.648	15296	14.3	30D	-N		P	1454	50	.7	EL	
GRP67308	17	1504+0	1505+1	1519	S26	E20	.506	15301	19.1	15	-N				60	.7	E	
ZURI	17	1504	1506	1512D	S27	E15	.476	15301	18.8	8D	-F		P	1506	90	1.1		
RAMY	17	1504	1505	1514	S26	E20	.506	15301	19.1	10	-B	4	C		36			
MCMA	17	1507E		1523D	S24	E20	.484	15301	19.1	16D	-N		P	1508	50	.6	E	
309 RAMY	17	1505	1507	1513	S26	W85	.995	15292	11.3	8	-N	4	C		9			Y5
310 RAMY	17	1521	1522	1527	S26	W85	.995	15292	11.3	6	-B	4	C		9			Y5
	17	1523	1535	NO FLARE PATROL														
	17	1537	1557	NO FLARE PATROL														
	17	1715	1724	NO FLARE PATROL														
	17	1732	1748	NO FLARE PATROL														
	17	1750	1853	NO FLARE PATROL														
	17	1916	1925	NO FLARE PATROL														
	17	1926	1950	NO FLARE PATROL														
	17	2000	2010	NO FLARE PATROL														
	17	2013	2216	NO FLARE PATROL														
311 RAMY	17	2056	2057	2101D	N16	W70	.949	15291	12.6	5D	-N	3	C					Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
					APPROX		CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY			CONC	TYPE	TIME	MEAS. AREA	CORR AREA		
	DATE MAY	START	MAX. PHASE	END	LAT.	MER. DIST.				MIN.				UT	Mill. of Disk	Sq. Deg.		
GRP67312	17	2118+0	2126+0	2135D	N19	W01	.366	15298	17.8	17	-B				80	.9	F	
RAMY	17	2118	2126	2135D	N19	W01	.366	15298	17.8	17D	-B	3	V		81		F	
RAMY	17	2118	2126	2135D	N19	W01	.366	15298	17.8	17D	-B	3	C		81		F	
	17	2334	2344	NO FLARE PATROL														
	18	0050	0101	NO FLARE PATROL														
	18	0109	0117	NO FLARE PATROL														
	18	0138	0211	NO FLARE PATROL														
	18	0242	0259	NO FLARE PATROL														
	18	0341	0400	NO FLARE PATROL														
	18	0604	0607	NO FLARE PATROL														
313 ABST	18	0623E	0626	0627D	S27	E15	.478	15301	19.4	4D	-N		P	0626	61	.7	E	Y5
314 KANZ	18	1024	1031	1046	S18	W48	.761	15296	14.8	22	-F	1						Y5
	18	1100	1159	NO FLARE PATROL														
315 MCMA	18	1159E		1213D	N18	E33	.620	15300	21.0	14D	-F		P	1159	60	.8		Y5
	18	1300	1316	NO FLARE PATROL														
	18	1515	1529	NO FLARE PATROL														
	18	1712	1720	NO FLARE PATROL														
316 MCMA	18	1754E		1840D	N20	W01	.381	15298	18.7	46D	-N		C	1755	110	1.2	E	Y5
	18	1844	1952	NO FLARE PATROL														
	18	2105	0020	NO FLARE PATROL														
	19	0035	0059	NO FLARE PATROL														
	19	0132	0145	NO FLARE PATROL														
	19	0152	0157	NO FLARE PATROL														
	19	0343	0348	NO FLARE PATROL														
	19	0443	0501	NO FLARE PATROL														
	19	0513	0516	NO FLARE PATROL														
317 KANZ	19	0813	0821	0821D	S24	W60	.881	15296	14.8	8D	-B	1						Y5
318 MONT	19	1002	1011	1021	S29	E03	.453	15301	19.6	19	-N		C	1011	110			Y5
GRP67319	19	1028	1034+1	1050	S24	W62	.896	15296	14.8	22	-N				60	1.4	D	
MONT	19	1023	1034	1043	S24	W64	.909	15296	14.6	15	-N		C	1034	50		D	
ATHN	19	1030E	1035	1050D	S25	W60	.883	15296	14.9	20D	-B	1		1035	66	1.2		
MCMA	19	1037E		1054	S24	W62	.896	15296	14.8	17D	-N		P	1037	60	1.5	D	
320 MCMA	19	1120E		1145D	N20	E20	.495	15300	21.0	25D	-F		C	1125	55	.6	E	Y5
GRP67321	19	1220+0	1221+2	1228	S25	W62	.897	15296	14.9	8	-B				20	.5		
RAMY	19	1220	1221	1223D	S25	W62	.897	15296	14.9	3D	-B	3	V		21			
RAMY	19	1220	1221	1227	S25	W62	.897	15296	14.9	7	-B	3	C		21			
TEHR	19	1222E	1223	1229	S23	W60	.880	15296	15.0	7D	-B	2	C		32			
322 MCMA	19	1328	1334	1343D	S24	W64	.909	15296	14.8	15D	-N		C	1334	45	1.2	E	Y5
	19	1434	1453	NO FLARE PATROL														
	19	1505	1517	NO FLARE PATROL														
323 MCMA	19	1517E		1600D	N21	E04	.400	15300	19.9	43D	1F		C	1518	220	2.4	E	Y5
324 MCMA	19	1532	1542	1555	S24	W67	.928	15296	14.6	23	-F		C	1542	30	1.0	D	Y5
325 MCMA	19	1720	1726	1740	S28	E03	.437	15301	19.9	20	-F		C	1726	50	.6	E	Y5
326 MCMA	19	1842	1856	1918	S24	W67	.928	15296	14.8	36	-N		C	1856	60	1.8	E	Y5
	19	1955	2030	NO FLARE PATROL														
	19	2103	2300	NO FLARE PATROL														
327 MANI	19	2343E	2343U	2355	S21	W76	.971	15296	14.3	12D	2N	2	P		400	9.7	Z	Y5
	20	0213	0225	NO FLARE PATROL														
328 MANI	20	0226	0236	0240	S25	W70	.946	15296	14.9	14	1N	3	P		150	3.3		Y5
	20	0259	0317	NO FLARE PATROL														
	20	0319	0335	NO FLARE PATROL														
	20	0400	0515	NO FLARE PATROL														

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
	MAY																	
329 KANZ	20	0806E		0812D	S22	W72	.954	15296	14.9	6D	-B	1						Y5
330 KHAR	20	0841E	0845	0900D	S23	W78	.979	15296	14.5	19D	-F		P	0841			DT	Y5
GRP67331	20	0910E	0910	0916	S24	W76	.972	15296	14.7	6	-F						D	
CATA	20	0910E	0910	0915	S24	W75	.968	15296	14.8	5D	-N	2		0910	56			
KHAR	20	0910E		0917D	S24	W78	.979	15296	14.5	7D	-F		P	0912			DT	
GRP67332	20	0950+3	1007+3	1054D	S24	W78	.979	15296	14.6	64	-N						D	
KANZ	20	0950	1008	1122D	S23	W76	.972	15296	14.7	92D	-N	1						
MONT	20	0953	1007	1012	S24	W78	.979	15296	14.6	19	-N		C	1007	50		D	
KHAR	20	0955E	1010	1013D	S24	W78	.979	15296	14.6	18D	-F		P	1010			DT	
KANZ	20	1008		1122D	S23	W76	.972	15296	14.7	74D	-F	1						
KHAR	20	1033E		1054D	S24	W78	.979	15296	14.6	21D	-F		P	1041			DT	
GRP67333	20	1120+8	1123 1130	1135	S24	W78	.979	15296	14.6	15	-N						D	
KHAR	20	1120E	1123	1130D	S24	W79	.982	15296	14.5	10D	-F		P				DT	
RAMY	20	1128	1130	1135	S24	W78	.979	15296	14.6	7	-B	3	C		13			
GRP67334	20	1143+5	1151+3	1210	S23	W78	.979	15296	14.6	27	-N				40		K	
KHAR	20	1143E		1205D	S23	W79	.982	15296	14.6	22D	-F		P				DT	
LVOV	20	1148	1151	1209	S22	W83	.992	15296	14.3	21	-F		C	1151	50		DK	
RAMY	20	1148	1151	1210	S24	W78	.979	15296	14.6	22	-B	3	C		16		F	
RAMY	20	1148	1151	1153D	S25	W76	.972	15296	14.8	5D	-B	3	V		16		F	
TEHR	20	1153E	1154	1157D	S23	W75	.968	15296	14.9	4D	-B	2	V		64			
	20	1353	1356	NO FLARE PATROL														
GRP67335	20	1455+1	1457+1	1504	S23	W80	.985	15296	14.6	9	-N						DK	
LVOV	20	1455	1458	1508	S22	W83	.992	15296	14.4	13	1F		C	1458	100		DK	
RAMY	20	1456	1457	1459	S24	W78	.979	15296	14.8	3	-N	3	C		22			
336 RAMY	20	1602	1604	1607	S24	W79	.982	15296	14.7	5	-N	3	C		17			Y5
	20	1610	2233	NO FLARE PATROL														
337 RAMY	20	1610	1612	1617	S24	W79	.982	15296	14.7	7	-N	3	C		23			Y5
338 RAMY	20	1807	1809	1812	S25	W79	.982	15296	14.8	5	-B	3	C		21			Y5
	20	2238	2240	NO FLARE PATROL														
339 VORO	21	0108	0110	0115	N18	E90	1.000	15314	27.8	7	-F		C	0110	45		DH	Y5
340 KHAR	21	0944E		1010D	N16	E90	1.000	15314	28.2	26D	1F		P					Y5
341 KHAR	21	0946E		1002D	S23	W90	1.000	15296	14.7	16D	-F		P					Y5
	21	1100	1136	NO FLARE PATROL														
342 KHAR	21	1137E		1223D	N16	E90	1.000	15314	28.2	46D	-F		P					Y5
343 KHAR	21	1137E		1147D	S23	W90	1.000	15296	14.7	10D	-F	*	P					Y5
344 RAMY	21	1235	1238	1245	N25	W90	1.000	15294	14.8	10	-B	4	C					Y5
345 RAMY	21	1250	1251	1254	N17	E81	.990	15314	27.6	4	-N	*	C					Y5
346 KHAR	21	1250E		1250D	N17	W89	1.000	15294	14.9		-F		P				D	Y5
347 RAMY	21	1316	1317	1319	N17	E81	.990	15314	27.6	3	-N	4	C					Y5
348 MCMA	21	1507E		1527D	N17	W10	.365	15300	20.9	20D	-N		C	1515	30	.3	EH	Y5
349 MCMA	21	1614		1640	S29	W22	.562	15301	20.0	26	-N		C	1625	50	.6	E	Y5
350 RAMY	21	1636E	1636	1653	N18	E76	.976	15314	27.4	17D	-N	3	C		9			Y5
351 RAMY	21	1716	1721	1724	N18	E76	.976	15314	27.4	8	-B	3	C		10			Y5
	21	1907	0153	NO FLARE PATROL														
GRP67352	22	0203+4	0208+3	0217	S27	W44	.755	15301	18.8	14	-B						E	
VORO	22	0203	0208	0217	S27	W45	.765	15301	18.7	14	-B		C	0208	125	1.9	E	
MITK	22	0207		0224	S28	W44	.760	15301	18.8	17	-N		C	0208			E	
PALE	22	0210E	0211U	0215	S26	W43	.741	15301	18.9	5D	-B	3	C		47		DE	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	MAY																	
	22	0600	0610	NO FLARE PATROL														
	22	0630	0645	NO FLARE PATROL														
	22	0800	0855	NO FLARE PATROL														
	22	0955	0957	NO FLARE PATROL														
	22	1022	1034	NO FLARE PATROL														
GRP67353	22	1433+1	1436+0	1443	S26	W44	.751	15301	19.3	10	-B				90	1.4	E	
RAMY	22	1433	1436	1437D	S26	W44	.751	15301	19.3	4D	-B	3	V		102			
RAMY	22	1433	1436	1443	S26	W44	.751	15301	19.3	10	-B	3	C		102			
MCMA	22	1434	1436	1443	S28	W50	.813	15301	18.9	9	-N		C	1436	60	1.1	E	
GRP67354	22	1459+2	1502 1509	1539	N18	E69	.944	15314	27.8	40	-N						E	
RAMY	22	1459	1509	1522	N19	E66	.928	15314	27.6	23	-B	3	C		28			
MCMA	22	1501	1502	1547	N18	E72	.959	15314	28.0	46	-N		C	1502	40	1.6	E	
RAMY	22	1522	1531	1531	N19	E66	.928	15314	27.6	9	-B	3	C		33			
GRP67355	22	1625+1	1626+2	1638	S26	W46	.770	15301	19.2	13	1B							
MCMA	22	1625	1628	1638	S26	W53	.832	15301	18.7	13	-B		C	1628	50	.9	E	
RAMY	22	1626	1626	1633D	S26	W46	.770	15301	19.2	7D	1B	3	C		132		FDE	
RAMY	22	1626	1626	1627D	S26	W45	.760	15301	19.3	1D	1B	3	V		132			
356 MCMA	22	1650	1651	1656	N21	E89	1.000	15314	29.4	6	-F		C	1651				Y5
357 MCMA	22	1816	1844	1909	N18	W24	.513	15300	21.0	53	-B		C	1844	50	.6	E	Y5
358 MCMA	22	1835	1842	1910	N16	E72	.958	15314	28.2	35	-F		C	1842	25	1.0	D	Y5
	22	2100	2208	NO FLARE PATROL														
GRP67359	23	0015	0024+8	0107	N18	E69	.944	15314	28.2	52	-N						E	
MITK	23	0015	0027	0130	N18	E66	.926	15314	28.0	75	1N		C	0027	140		E	
PALE	23	0024E	0024U	0107D	N18	E69	.944	15314	28.2	43D	-B	3	C		40		DE	
MANI	23	0031E	0032	0050	N17	E70	.948	15314	28.3	19D	-N	3	V		80	1.8		
GRP67360	23	0629+0	0636+1	0704	N18	E65	.920	15314	28.1	35	-F				80		AD	
MITK	23	0629	0637	0700	N17	E65	.919	15314	28.1	31	-F		C	0637	70			
ABST	23	0629	0636	0707D	N20	E65	.922	15314	28.1	38D	1F		P	0636	104		AD	
361 MONT	23	0801	0812	0839	S33	W07	.529	15313	22.8	38	-F		C	0812	40		D	Y5
362 MONT	23	0845	0851	0911	N17	E65	.919	15314	28.2	26	1N		C	0857	250			Y5
	23	0923	0947	NO FLARE PATROL														
	23	1135	1220	NO FLARE PATROL														
363 RAMY	23	1140	1141	1200D	N19	E53	.829	15314	27.5	20D	-B	3	C		20			Y5
	23	1245	1457	NO FLARE PATROL														
	23	1515	1525	NO FLARE PATROL														
	23	1526	1551	NO FLARE PATROL														
	23	1557	1607	NO FLARE PATROL														
364 MCMA	23	1613	1613	1615D	N22	E67	.937	15314	28.7	2D	-N		P	1613	20	.6	D	Y5
	23	1615	1725	NO FLARE PATROL														
	23	1726	1838	NO FLARE PATROL														
	23	1844	2215	NO FLARE PATROL														
365 MITK	24	0433	0534	0640	S30	W03	.477	15305	24.0	121	?F		C	0534	220	2.5	EH	Y5
	IMP.1 NO # CULG1																	
GRP67366	24	0750+5	0805+5	0830	N25	E64	.923	15314	29.1	40	-N						E	
CATA	24	0750	0810	0840	N26	E63	.919	15314	29.1	50	1B	2		0810	84			
MEUD	24	0755	0805	0820	N25	E66	.934	15314	29.3	25	-F		C				E	
367 MEUD	24	0856E		0857D	S16	W12	.319	15318	23.5	1D	-F		C	0857	30	.3	D	Y5
368 CATA	24	0900	0900	0905	S17	W12	.332	15318	23.5	5	-N	2		0900	28	.3		Y5
369 CATA	24	0905	0905	0915	N27	E66	.937	15314	29.3	10	?B	2		0905	84			Y5
	IMP.1 NO # MONT2																	
	24	1100	1239	NO FLARE PATROL														
370 MCMA	24	1239E		1304D	S33	W14	.559	15305	23.5	25D	-N		C	1239	25	.3	DH	Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
					APPROX													
	DATE MAY	START	MAX. PHASE	END	LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
371 MCMA	24	1525	1530	1606	N20	E52	.823	15314	28.5	41	-N		C	1530	45	.8	EL	Y5
	24	1653	1710	NO FLARE PATROL														
	24	1712	1800	NO FLARE PATROL														
372 MCMA	24	1800E		1805D	S28	W83	.993	15301	18.5	5D	1N		C	1802			E	Y5
	24	1805	1820	NO FLARE PATROL														
GRP67373	24	1901+0	1914+5	2108D	N17	E42	.712	15314	27.9	127	1B				190	2.7	L	
PALE	24	1901	1914	2023D	N17	E42	.712	15314	27.9	82D	1B	3	C		200		FDE	
PALE	24	1901	1914	1923D	N17	E42	.712	15314	27.9	22D	1B	3	V		200		FDE	
MCMA	24	1913E	1919	2108	N18	E42	.717	15314	28.0	115D	1B		C	1919	175	2.8	EL	
PALE	24	2054E	2054U	2142D	N17	E41	.701	15314	27.9	48D	-N	3	C		49		DE	
	24	1903	1913	NO FLARE PATROL														
	24	1929	1944	NO FLARE PATROL														
	24	2121	2137	NO FLARE PATROL														
	24	2321	2328	NO FLARE PATROL														
	25	0104	0110	NO FLARE PATROL														
	25	0112	0131	NO FLARE PATROL														
	25	0141	0148	NO FLARE PATROL														
	25	0154	0235	NO FLARE PATROL														
	25	0245	0250	NO FLARE PATROL														
	25	0400	0440	NO FLARE PATROL														
	25	0443	0515	NO FLARE PATROL														
374 ABST	25	0558E	0612	0623	N20	E45	.756	15314	28.6	25D	-N		P	0612	122	1.9	DF	Y5
375 ABST	25	0614	0618	0623	N27	E57	.881	15314	29.5	9	-N		C	0618	87	1.8	DF	Y5
376 ABST	25	0639	0642	0647	N17	E29	.560	15314	27.5	8	-N		C	0642	87	1.1	DF	Y5
377 CATA	25	0725E	0725	0810D	N14	E33	.591	15314	27.8	45D	-B	2		0725	73	.9		Y5
378 KHAR	25	0908E		0915D	N20	E44	.745	15314	28.7	7D	-F		P				E	Y5
GRP67379	25	0941	0942+2	0952	N15	E30	.559	15314	27.7	11	-N						E	
TEHR	25	0941	0944	0952	N15	E29	.546	15314	27.6	11	-B	2	C		95			
KHAR	25	0942E	0942	0950D	N15	E32	.584	15314	27.8	8D	-F		P				E	
380 CATA	25	1015	1025	1040D	N24	E90	1.000	15319	1.2	25D	1N	2		1025	112			Y5
	25	1105	1122	NO FLARE PATROL														
381 MCMA	25	1327	1332	1337	N22	W67	.936	15300	20.5	10	-F		C	1332	30	.9	E	Y5
382 MCMA	25	1401	1403	1405	N20	E75	.972	15319	31.2	4	-N		C	1403	15	.6	D	Y5
383 MCMA	25	1657	1708	1719	N21	E74	.969	15319	31.3	22	-N		C	1708	30	1.2	E	Y5
GRP67384	25	1707	1733 1740	1810	N19	E33	.621	15314	28.2	63	-B						L	
MCMA	25	1707	1733	1810	N21	E35	.656	15314	28.3	63	1N		C	1733	150	2.0	EL	
PALE	25	1715E	1740	1755D	N18	E31	.591	15314	28.0	40D	-B	3	C		87		FDE	
385 PALE	25	1754E	1754U	1757D	N21	W64	.917	15300	20.9	3D	-N	3	C		30		DE	Y5
386 MCMA	25	1807	1808	1816	N21	E75	.973	15319	31.4	9	-N		C	1808	15	.6	D	Y5
387 MCMA	25	1837	1842	1853D	N16	E25	.504	15314	27.7	16D	-N		C	1842	40	.5	E	Y5
	25	2115	2301	NO FLARE PATROL														
	25	2315	2337	NO FLARE PATROL														
388 MITK	26	0041	0047	0127	N25	E35	.682	15314	28.7	46	-F		C	0047			E	Y5
	26	0051	0107	NO FLARE PATROL														
	26	0114	0119	NO FLARE PATROL														
	26	0328	0400	NO FLARE PATROL														
389 ABST	26	0514	0518	0528	N16	E21	.455	15314	27.8	14	-F		C	0518	104	1.2	E	Y5
390 ABST	26	0551E	0628	0714D	N17	E36	.643	15314	28.9	83D	-F		P	0628	104	1.4	E	Y5
391 MCMA	26	1103	1109	1118	N20	E65	.921	15319	31.3	15	-N		C	1109	25	.6	D	Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	MAY																	
392 HCMA	26	1157	1205	1215D	N20	E19	.475	15314	27.9	18D	-N		C	1205	70	.8	E	Y5
393 HCMA	26	1241	1245	1315	N20	E64	.915	15319	31.3	34	-N		C	1245	20	.6	D	Y5
394 HCMA	26	1323	1332	1347	N20	E63	.908	15319	31.3	24	-N		C	1332	20	.6	D	Y5
395 HCMA	26	1443	1450	1458	N23	E10	.443	15314	27.4	15	-F		C	1450	40	.5	E	Y5
GRP67396	26	1604	1607 1645	1720D	N20	E61	.895	15319	31.2	76	-N						K	
HCMA	26	1604	1607	1720D	N20	E61	.895	15319	31.2	76D	-N		C	1607	20	.6	DK	
HCMA	26	1604	1645	1720D	N20	E61	.895	15319	31.2	76D	-N		C	1645	20	.6	DK	
GRP67397	26	1732	1751 1800	1813	N20	E61	.895	15319	31.3	41	1B						E	
HCMA	26	1732	1751	1812	N20	E61	.895	15319	31.3	40	1B		C	1751	100	3.2	E	
PALE	26	1744E	1803U	1813	N20	E61	.895	15319	31.3	29D	1B	3	C		148		DE	
398 PALE	26	1807	1810	1813	N18	E16	.423	15314	28.0	6	-N	3	C		50		DE	Y5
	26	2147	2357	NO FLARE PATROL														
399 VORO	26	2357		0006	N24	E84	.434	15314	27.3	9	-N		C	2357	116	1.3	E	Y5
	27	0050	0101	NO FLARE PATROL														
	27	0117	0134	NO FLARE PATROL														
	27	0137	0145	NO FLARE PATROL														
	27	0303	0305	NO FLARE PATROL														
400 TACH	27	0321E		0331	N21	E55	.850	15319	31.3	10D	1F		V	0321	221	4.3	E	Y5
401 ATHN	27	0604E	0605	0640D	N21	E26	.557	15314	29.2	36D	-N	1		0605	66	1.1		Y5
402 ABST	27	0610E	0612	0614D	N21	E56	.858	15319	31.5	40	-F		P	0612	61	1.2	BD	Y5
403 KANZ	27	0812	0816	0819D	N19	E51	.809	15319	31.2	7D	-B	1						Y5
404 ZURI	27	0857	0901	0915	N21	E18	.476	15314	28.7	18	-F		C	0901	100	1.2		Y5
405 ZURI	27	0925	0925	0931	N16	E51	.801	15319	31.2	6	-N		C	0925	50	.9		Y5
406 ZURI	27	0947E	0949	0959D	N18	E18	.441	15314	28.8	12D	-F		P	0949	80	.9		Y5
GRP67407	27	1005	1011	1025	N20	E52	.821	15319	31.3	20	1N				160	2.8		
MEUD	27	1005	1011	1025	N20	E53	.830	15319	31.4	20	1N		C	1011	150	2.6		
ZURI	27	1013E	1013	1017D	N20	E52	.821	15319	31.3	4D	1N		P	1013	180	3.3		
408 HCMA	27	1208	1211	1245D	N22	W04	.401	15314	27.2	37D	-N		C	1211	60	.7	E	Y5
409 HCMA	27	1230	1232	1242	N19	E07	.365	15314	28.0	12	-N		C	1232	30	.3	DL	Y5
410 HCMA	27	1256	1258	1304	N27	E23	.587	15314	29.3	8	-N		C	1258	30	.4	E	Y5
411 HCMA	27	1256	1259	1303	N22	E48	.791	15319	31.1	7	-N	*	C	1259	40	.7	E	Y5
GRP67412	27	1620>9	1625	1655	N20	E48	.784	15319	31.3	35	-F						EH	
HCMA	27	1620	1625	1700	N20	E48	.784	15319	31.3	40	-N		C	1625	80	1.4	EH	
KANZ	27	1639		1650	N21	E49	.797	15319	31.4	11	-F	1						
413 HCMA	27	2040	2041	2054D	N19	E03	.350	15314	28.1	14D	-N		C	2041	25	.3	D	Y5
	27	2054	2228	NO FLARE PATROL														
	27	2243	2252	NO FLARE PATROL														
414 MITK	28	0145	0154	0219	N26	E20	.558	15314	29.6	34	1N		C	0154	200	2.4	FH	Y5
GRP67415	28	0715	0719+0 0730+4	0752	N17	W04	.319	15314	28.0	37	-N						F	
CATA	28	0715	0730	0755	N17	W05	.323	15314	27.9	40	-B	2		0730	67	.7		
TEHR	28	0716E	0734	0748	N17	W04	.319	15314	28.0	32D	-B	3	C		127		F	
TEHR	28	0716E	0734	0737D	N17	W04	.319	15314	28.0	21D	-B	3	C		127		F	
TEHR	28	0716E	0719	0737D	N17	W04	.319	15314	28.0	21D	-F	3	V		64		F	
TEHR	28	0716E	0719	0748	N17	W04	.319	15314	28.0	32D	-F	3	C		64		F	
CATA	28	0730E	0730	0755	N15	W07	.302	15314	27.8	25D	-B	2		0730	28	.3		
416 CATA	28	0825	0825	0835	N17	W09	.346	15314	27.7	10	-B	2		0825	112	1.2		Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LON. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	MAY																
GRP67417	28	1044+1	1045+2	1105	N18	W05	.339	15314	28.1	21	-B				80	.9	
TEHR	28	1044E	1047	1101	N18	W05	.339	15314	28.1	17D	-B	2	C		95		F
CATA	28	1045	1045	1105	N15	W09	.317	15314	27.3	20	-B	2		1045	67	.7	
MCMA	28	1057E		1120D	N18	W04	.335	15314	28.2	23D	-N		P	1057	100	1.1	BE
GRP67418	28	1310	1317+0 1333+6	1438	N20	W13	.418	15314	27.6	88	1B						K
MCMA	28	1310	1317	1450D	N20	W13	.418	15314	27.6	100D	1B		C	1317	180	2.0	EFK
MCMA	28	1310	1333	1450D	N20	W13	.418	15314	27.6	100D	1B		C.	1333	180	2.0	EFK
KANZ	28	1316E	1317	1339	N21	W17	.465	15314	27.3	23D	1B	2					
KANZ	28	1326	1339	1408	N17	W06	.327	15314	28.1	42	1B	2					
KANZ	28	1416	1421	1426	N17	W08	.339	15314	28.0	10	-B	1					
GRP67419	28	1451	1459+5	1629	N18	W07	.348	15314	28.1	98	1B						FKLX
MCMA	28	1451	1504	1629	N18	W10	.367	15314	27.9	98	1B		C	1504	280	3.1	EFLX
KANZ	28	1459E	1459	1526D	N18	W08	.354	15314	28.0	27D	1B	1					
LOCA	28	1510	1510	1535	N17	W07	.333	15314	28.1	25	2N		S	1510	713	7.8	FK
ZURI	28	1628E	1632	1648	N18	W07	.348	15314	28.2	20D	-F		P	1632	180	2.0	
420 ZURI	28	1704	1714	1728	N16	W10	.339	15314	28.0	24	-N		C	1714	70	.8	Y5
	28	1744	0305	NO FLARE PATROL													
	29	0645	0646	NO FLARE PATROL													
	29	0651	0653	NO FLARE PATROL													
421 KANZ	29	0655	0657	0708	N19	W15	.421	15314	28.2	13	-B	1					E Y5
422 KHAR	29	0947E		0947D	N18	W18	.439	15314	28.1		-F		P				D Y5
GRP67423	29	1020+1	1023+0	1043	N20	E25	.534	15319	31.3	23	-F						E
KHAR	29	1020E	1023	1030D	N21	E24	.533	15319	31.2	10D	-F		P				E
ZURI	29	1021	1023	1043	N20	E26	.545	15319	31.4	22	-N		C	1023	60	.8	
GRP67424	29	1039+1	1053 1105+0	1132	N22	W08	.412	15314	28.8	53	1N				200	2.2	E
KHAR	29	1023E		1107D	N17	W20	.450	15314	27.9	44D	-F		P				E
ZURI	29	1039	1105	1131	N22	W08	.412	15314	28.8	52	-N		C	1105	180	2.1	
MONT	29	1040	1105	1130D	N22	W08	.412	15314	28.8	50D	-N		C	1105	220		
KHAR	29	1040E	1053	1130D	N23	W10	.438	15314	28.7	50D	1F		P				E
KANZ	29	1104E		1104D	N23	W08	.427	15314	28.9		-B	1					E
MCMA	29	1113E		1133	N21	W08	.397	15314	28.9	20D	-N		C	1113	80	.9	E
425 MCMA	29	1220	1223	1229	N22	E26	.563	15319	31.5	9	-F		C	1223	30	.4	E Y5
426 MCMA	29	1512	1516	1526	N18	W23	.494	15314	27.9	14	-F	*	C	1516	20	.3	E Y5
GRP67427	29	1512+1	1515+2	1537	N21	E24	.533	15319	31.4	25	-N						E
MCMA	29	1512	1515	1530D	N22	E23	.532	15319	31.4	18D	-N		C	1515	50	.6	E
ZURI	29	1513	1517	1537	N20	E25	.534	15319	31.5	24	-N		C	1517	140	1.8	
	29	1545	1600	NO FLARE PATROL													
	29	1626	2200	NO FLARE PATROL													
GRP67428	29	1720+0	1759+1	1848	N17	W23	.485	15314	28.0	88	1B				420	4.9	
RAMY	29	1720	1759	1836	N16	W25	.500	15314	27.8	76	1B	3	C		355		
RAMY	29	1720	1759	1802D	N16	W25	.500	15314	27.8	42D	1B	3	V		355		DE
PALE	29	1740E	1800U	1808D	N19	W21	.481	15314	28.2	28D	1B	3	V		475		DE F
PALE	29	1740E	1800U	1900D	N19	W21	.481	15314	28.2	90D	1B	3	C		475		DE F
	29	2255	0356	NO FLARE PATROL													
429 PALE	29	2310E	2310U	0025D	N21	E17	.464	15319	31.2	75D	-N	3	C		45		DE Y5
430 PALE	29	2310E	2316U	0003D	S24	W58	.871	15331	25.6	53D	-B	3	C		58		FDE Y5
GRP67431	30	0403	0410+2	0427	N21	W39	.694	15314	27.2	24	1N				230	3.2	U
TACH	30	0403	0410	0427	N21	W39	.694	15314	27.2	24	1N		C	0410	265	3.8	EU
PALE	30	0411E	0412U	0413D	N21	W39	.694	15314	27.2	20	1B	3	C		199		FDE
432 TACH	30	0552	0554	0600D	S18	W29	.548	15321	28.1	8D	-N		P	0600	133	1.6	D Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
	MAY																	
GRP67433	30	0605>9	0623+7 0712	0728	N21	E15	.444	15319	31.4	83	1B				190	2.2	F	
CATA	30	0605E	0630	0710D	N21	E14	.436	15319	31.3	65D	1B	2		0630	252	2.8		
TEHR	30	0619	0623	0630D	N20	E16	.441	15319	31.5	11D	-B	1	V		190		F	
TEHR	30	0619	0623	0641	N20	E16	.441	15319	31.5	22	-B	1	C		190		F	
KHAR	30	0640E	0640	0730D	N21	E14	.436	15319	31.3	50D	1F		P				E	
MONT	30	0655E	0712	0746	N22	E15	.457	15319	31.4	51D	-N		C	0712	150			
KHAR	30	0744E		0857D	N22	E17	.474	15319	31.6	73D	1F		P	0818	220	2.6	E	
GRP67434	30	0620+0	0623+0	0647	N18	W11	.371	15314	29.4	27	-B				140	1.5	F	
TEHR	30	0620	0623	0647	N18	W06	.339	15314	29.8	27	-B	1	C		190		F	
TEHR	30	0620	0623	0630D	N18	W16	.417	15314	29.1	10D	-B	1	V		95			
GRP67435	30	0630E	0721+6	0827	N16	W30	.561	15314	28.0	117	2B				500	6.1	FIL	
CATA	30	0630E	0725	0735D	N16	W32	.586	15314	27.9	65D	2B	2		0725	477	6.0		
KHAR	30	0640E	0727	0840D	N16	W34	.610	15314	27.7	120D	2N		P	0752	500	6.4	EILIB	
MONT	30	0655E	0725	0811	N16	W30	.561	15314	28.0	76D	1N		C	0725	440			
TEHR	30	0716	0721	0813	N17	W26	.519	15314	28.4	57	2B	2	C		541		F	
TEHR	30	0716	0721	0735D	N17	W26	.519	15314	28.4	19D	2B	2	V		541		F	
ZURI	30	0808E	0808	0856	N17	W33	.604	15314	27.9	48D	1N		P	0808	270	3.4		
	30	0653	0655	NO FLARE PATROL														
GRP67436	30	0902+0	0910+1	0942	N20	E13	.415	15319	31.4	40	-N						EH	
ZURI	30	0902	0910	0942	N20	E13	.415	15319	31.4	40	-N		C	0910	60	.7		
KHAR	30	0902E	0911	0938D	N20	E14	.423	15319	31.4	36D	1F		P	0909	200	2.2	EH	
437 KHAR	30	0909E		0920C	S23	W66	.925	15331	25.4	11D	-F		P				E	Y5
GRP67438	30	0914	0916+1	0922	N20	W41	.711	15314	27.3	8	-F						D	
ZURI	30	0914	0916	0920	N20	W42	.721	15314	27.2	6	-N		C	0916	100	1.5		
KHAR	30	0916E	0917	0923D	N21	W41	.715	15314	27.3	7D	-F		V	0917			D	
439 ZURI	30	0954	0956	0958	N20	W42	.721	15314	27.3	4	-F		C	0956	100	1.5		Y5
GRP67440	30	0955+6	1005+3	1022	N17	W28	.543	15314	28.3	27	-N						D	
LOCA	30	0955	1005	1030	N17	W28	.543	15314	28.3	35	1N		V	1005	204	2.5		
ZURI	30	1000	1006	1022	N18	W28	.551	15314	28.3	22	-B		C	1006	110	1.4		
MONT	30	1001	1008	1014	N18	W30	.574	15314	28.2	13	-F		C	1008	50		D	
KHAR	30	1004E		1007D	N17	W27	.531	15314	28.4	3D	1F		V	1005			D	
441 ZURI	30	1016	1020	1026	N20	E13	.415	15319	31.4	10	-F		C	1020	90	1.0		Y5
GRP67442	30	1100+9	1131+6 1143	1255	S30	E58	.848	15330	4.4	115	1N				180	3.5	EG	
ZURI	30	1100	1143	1300	S29	E55	.860	15330	3.6	120	1N		C	1143	200	4.0		
MONT	30	1109	1131	1149D	S30	E54	.856	15330	3.5	40D	-N		C	1131	180		G	
KHAR	30	1123E	1137	1233D	S30	E53	.848	15330	3.4	70D	1N		P	1137	165	3.4	E	
MCMA	30	1152E		1250	S30	E53	.848	15330	3.5	58D	1F		C	1152	100	2.1	BE	
443 KHAR	30	1143E	1143	1157D	N23	W23	.541	15314	28.8	14D	-F		P				E	Y5
GRP67444	30	1233+2	1241+7	1324	N20	E10	.393	15319	31.3	51	-N				130	1.4	E	
MCMA	30	1233	1241	1310	N21	E12	.421	15319	31.4	37	-N		C	1241	80	.9	E	
ZURI	30	1234	1248	1324	N20	E11	.399	15319	31.3	50	-N		C	1248	140	1.6		
CATA	30	1235	1245	1300D	N20	E10	.393	15319	31.3	25D	-B	2		1245	168	1.8		
KHAR	30	1253E	1253	1330C	N20	E10	.393	15319	31.3	37D	-F		P				E	
445 MCMA	30	1238	1241	1251	N21	W39	.694	15314	27.6	13	-F		C	1241	20	.3	DL	Y5
GRP67446	30	1307+1	1308+1	1320	N21	W44	.746	15314	27.2	13	-N						E	
MCMA	30	1307	1309	1326	N22	W44	.751	15314	27.2	19	-N		C	1309	45	.7	E	
ZURI	30	1308	1308	1316	N20	W44	.742	15314	27.2	8	-N		C	1308	140	2.1		
KHAR	30	1310E	1310	1320D	N21	W43	.736	15314	27.3	10D	-F		P				E	
447 MCMA	30	1336	1338	1354	N22	W23	.531	15314	28.8	18	-N		C	1338	40	.5	E	Y5
GRP67448	30	1458+2	1459+1 1510	1514	N22	W23	.531	15314	28.9	16	-N				50	.6	K	
ZURI	30	1458	1500	1512	N21	W22	.511	15314	29.0	14	-F		C	1500	70	.8		
MCMA	30	1459E	1459	1518	N22	W23	.531	15314	28.9	19D	-N		C	1459	30	.4	DK	
MCMA	30	1459E	1510	1518	N22	W23	.531	15314	28.9	19D	-N		C	1510	30	.4	DK	
KANZ	30	1500	1500	1514	N22	W25	.552	15314	28.8	14	-N	2						

Hα SOLAR FLARES

MAY 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS		MEASUREMENTS			REMARKS	
					APPROX		CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY									
	DATE MAY	START	MAX. PHASE	END	LAT.	MER. DIST.				MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
GRP67449	30	1515+3	1520+3	1534	N21	W45	.756	15314	27.3	19	-N				100	1.5	E	
CATA	30	1515	1520	1525D	N21	W44	.746	15314	27.3	10D	-B	2		1520	112	1.7		
ZURI	30	1516	1522	1536	N20	W45	.752	15314	27.3	20	-B		C	1522	110	1.7		
MCMA	30	1516	1523	1528D	N22	W45	.760	15314	27.3	12D	-F		C	1523	70	1.1	E	
KANZ	30	1518	1523	1532	N21	W46	.766	15314	27.2	14	-B	2						
GRP67450	30	1523+3	1531+1	1600	N18	W33	.610	15314	28.2	37	1B						E	
MCMA	30	1523		1551D	N18	W33	.610	15314	28.2	28D	-B		C	1532	90	1.2	E	
KANZ	30	1526	1531	1554	N19	W33	.616	15314	28.2	28	1B	2						
ZURI	30	1526	1532	1546D	N17	W33	.604	15314	28.2	20D	1N		P	1532	200	2.6		
WEND	30	1538E		1606D	N18	W33	.610	15314	28.2	28D	1N		V		500	6.8		
GRP67451	30	1532+1	1534+3	1551	N21	E11	.414	15319	31.5	19	-N				50	.6	E	
ZURI	30	1532	1534	1546D	N20	E10	.393	15319	31.4	14D	-F		P	1534	70	.8		
MCMA	30	1532		1551	N21	E11	.414	15319	31.5	19	-N		C	1539	40	.5	E	
KANZ	30	1533	1537	1551	N21	E11	.414	15319	31.5	18	-N	2					E	
	30	1608	1625	NO FLARE PATROL														
	30	1632	1648	NO FLARE PATROL														
	30	1656	1706	NO FLARE PATROL														
452 MCMA	30	1706E		1718D	N19	W37	.662	15314	27.9	12D	-F		C	1712	30	.4	EL	Y5
453 MCMA	30	1737	1739	1742	N27	E12	.503	15319	31.6	5	-N		C	1739	20	.3	E	Y5
GRP67454	30	1756E	1800+3	1838	N20	E07	.375	15319	31.3	42	-N				50	.5		
RAMY	30	1756E	1800	1838	N21	E06	.386	15319	31.2	42D	-B	3	C		60		FDE	
MCMA	30	1801E	1803	1809D	N20	E08	.380	15319	31.4	8D	-F		C	1803	50	.6	E	
	30	1809	2100	NO FLARE PATROL														
GRP67455	30	1927E	1927	2027	N18	W36	.645	15314	28.1	60	1B				280	3.7	U	
PALE	30	1927E	1927U	2027	N18	W36	.645	15314	28.1	60D	1B	3	C		278		UDE	
PALE	30	1927E	1927U	1933D	N18	W36	.645	15314	28.1	6D	-B	3	V		278		DE	
456 VORO	30	2110E		2141	S18	W36	.633	15321	28.2	31D	-N		C	2114	108	1.4	EJ	Y5
457 VORO	30	2335	2339	2355	N28	W18	.555	15314	29.6	20	-N		C	2339	99	1.2	DJ	Y5
458 VORO	30	2337	2341	2347	N18	W46	.755	15314	27.5	10	-F		C	2341	45	.6		Y5
459 VORO	31	0026	0027	0029	N16	W40	.681	15314	28.0	3	-N		C	0027	90	1.2	DJ	Y5
460 VORO	31	0034	0035	0038	S24	W88	.999	15331	24.4	4	-B		C	0035	36		D	Y5
	31	0103	0105	NO FLARE PATROL														
	31	0111	0221	NO FLARE PATROL														
	31	0337	0401	NO FLARE PATROL														
	31	0409	0509	NO FLARE PATROL														
461 ABST	31	0644E	0644	0652D	N22	E05	.396	15319	31.7	8D	-F		P	0644	70	1.3	CD	Y5
GRP67462	31	0733E	0733 0740+0	0758	N17	W42	.708	15314	28.2	25	-B				130	1.9		
MONT	31	0733E	0733	0802	N17	W43	.719	15314	28.1	29D	-N		C	0733	180			
TEHR	31	0738E	0740	0753	N17	W42	.708	15314	28.2	15D	-B	1	C		127			
TEHR	31	0738E	0740	0745D	N17	W42	.708	15314	28.2	7D	-B	1	V		127			
GRP67463	31	0820+1	0823+4	0845	N17	W42	.708	15314	28.2	25	-N						E	
ZURI	31	0820	0823	0844	N18	W42	.712	15314	28.2	24	1N		C	0828	150	2.3		
MONT	31	0821	0832	0846	N16	W43	.715	15314	28.1	25	-F		C	0832	60		E	
GRP67464	31	1006+8	1048+5 1124+6	1353	N20	W43	.731	15314	28.2	227	3B						FILSUW	
ZURI	31	1006	1124	1444D	N21	W41	.715	15314	28.3	278D	4B		P	1124	1850	27.3		
MONT	31	1014	1053	1200D	N21	W41	.715	15314	28.4	106D	3B		C	1053	1700		FS	
KANZ	31	1023E		1302D	N22	W40	.709	15314	28.4	159D	3B	1						
MCMA	31	1031E	1048	1450D	N20	W42	.721	15314	28.3	259D	2B		C	1049	360	5.4	BFU	
WEND	31	1035E	1048	1308	N20	W40	.699	15314	28.4	153D	3N		P		1200	13.2	TW	
RAMY	31	1044E	1053	1059D	N16	W48	.769	15314	27.8	15D	2B	3	V		468		FDE	
RAMY	31	1044E	1106	1109D	N16	W48	.769	15314	27.8	25D	2B	3	C		804		U F	
HERS	31	1103E	1130	1305	N20	W48	.782	15314	27.9	122D	3N		P				F	
KHAR	31	1140E	1140	1340D	N23	W40	.715	15314	28.5	120D	3N		P	1140	1400	21.0	EIU	
KIEV	31	1250E	1250	1359D	N21	W42	.725	15314	28.4	69D	3N		P	1250	1500	22.1	BILU	
465 ZURI	31	1021	1025	1027	S17	W25	.492	15335	29.6	6	-F		C	1025	80	1.0		Y5

Hα SOLAR FLARES

MAY 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	MAY																
466 RAMY	31	1130	1132	1206	S16	W26	.497	15335	29.5	36	-B	3	C		23		Y5
467 RAMY	31	1427	1430	1447	N21	W04	.377	15319	31.3	20	-B	3	C		53		Y5
GRP67468	31	1621+7	1632+0	1645	N21	W56	.856	15314	27.5	24	-N				45	.9	E
RAMY	31	1621	1632	1651	N21	W57	.864	15314	27.4	30	-B	3	C		52		
MCMA	31	1628	1632	1639	N22	W55	.850	15314	27.6	11	-F		C	1632	40	.8	E
469 RAMY	31	1646	1651	1703	S16	W28	.523	15335	29.6	17	-N	3	C		23		Y5
470 MCMA	31	1755	1758	1808	S17	W30	.554	15335	29.5	13	-F		C	1758	80	1.0	EL Y5
471 MCMA	31	1812	1815	1821	N20	W07	.373	15319	31.2	9	-N		C	1815	50	.6	E Y5
472 MCMA	31	1904	1905	1915	N22	W05	.396	15319	31.4	11	-N		C	1905	20	.2	D Y5
	31	2008	2017	NO FLARE PATROL													
473 MCMA	31	2044E	2056	2110	N17	E52	.811	15333	4.8	26D	-B		C	2056	25	.5	D Y5
	31	2239	2242	NO FLARE PATROL													

MAY 1978

DAILY FLARE INDICES
Includes all Flares

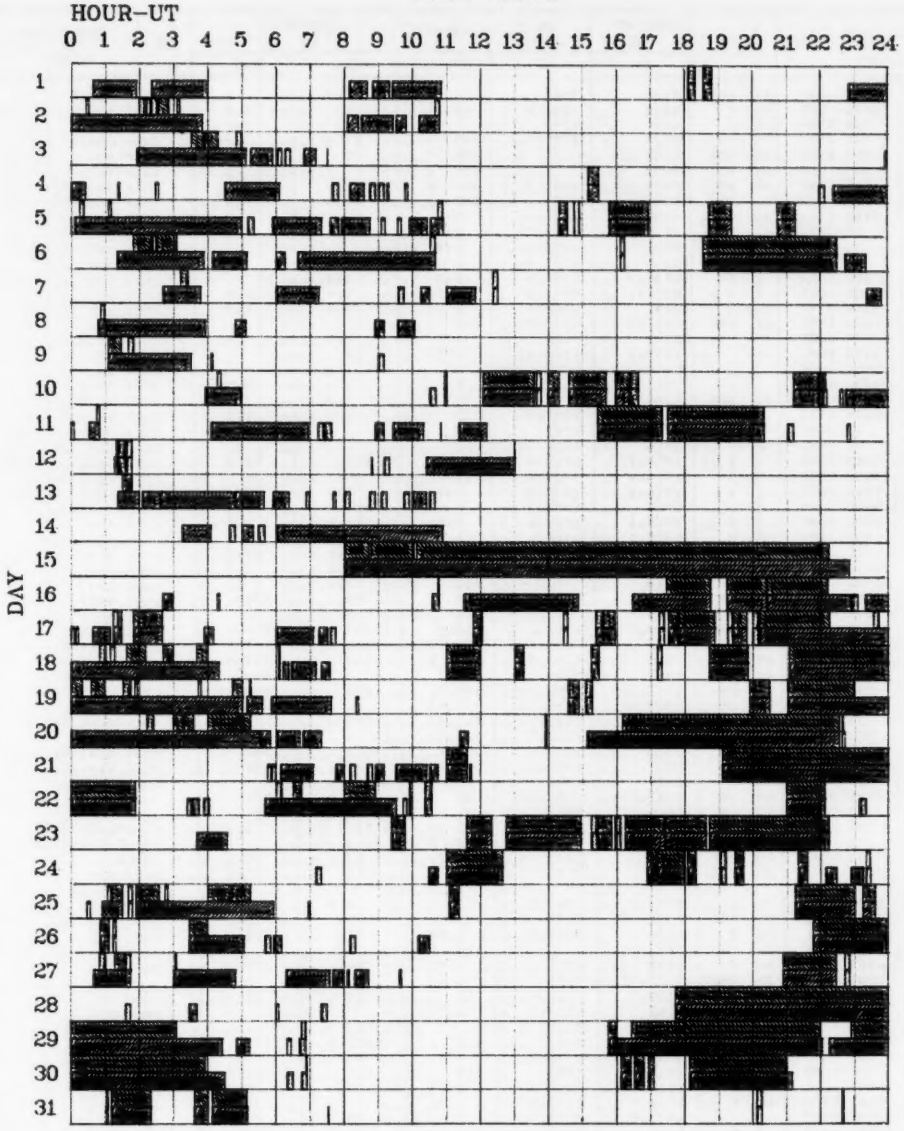
Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
780501	538.54	22.6	780511	261.32	19.2	780521	28.41	16.6
780502	155.59	23.0	780512	6.76	23.6	780522	31.34	21.3
780503	76.00	23.1	780513	27.02	23.7	780523	18.21	14.0
780504	83.60	23.7	780514	28.45	24.0	780524	39.11	20.2
780505	18.84	21.0	780515	19.75	9.9	780525	34.42	19.1
780506	18.19	18.6	780516	93.94	19.7	780526	41.40	21.0
780507	23.64	23.7	780517	17.62	17.7	780527	59.64	21.7
780508	22.22	23.9	780518	15.97	16.5	780528	195.54	14.7
780509	6.12	23.5	780519	124.81	19.8	780529	209.17	13.1
780510	26.87	19.3	780520	16.96	15.5	780530	361.58	20.4
						780531	2378.65	21.2

When no Flare Index is given, it is 0 for that day.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

MAY 1978



Observatories included in total patrol:

Abastumani	Huancayo	Locarno	Monte Mario	Voroshilov
Athenes	Istanboul	Lvov	Palehua	Wendelstein
Bucharest	Kandilli	Manila	Ramey	Zürich
Catania	Kanzelhohe	McMath-Hulbert	Tashkent	
Herstmonceux	Kharkov	Meudon	Tehran	
Holloman	Kiev	Mitaka	Upice	

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1978

MAY 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
1	2695	PENT	21 GRF	0045	0100	50	7.2	3.6		
	2695	PENT	45 C	0048	0052.5	10	9	4.4		
	708	SYDN	8 S	0146	0146	.2				
	221	ABST	44 NS	0500	0715.5	240	17			
	260	ONDR	44 NS	0650 E		494 D	30	4		
	127	TORN	44 NS	0650 E		480 D				V=1
	245	SGMR	44 NS	0943 E	1824.7	836 D	32			3G,CONT
	410	SGMR	44 NS	0943 E	1828.1	836 D	28.9			3G,CONT
	9100	GORK	20 GRF	0533.8	0534.1	8.4	18	4.1		
	33	UPIC	41 F	0534.6	0538.7	9.9				
	29	UPIC	41 F	0534.7	0539.1	6.8				
	950	GORK	40 F	0536	0537.8	3	11.2			
	650	GORK	2 SF	0536.3	0538.1	2.9	8.3			
	2950	GORK	1 S	0537.1	0538.1	3.5	6.8	3.4		
	2800	OTTA	240 R	1102	1110	8	5.8	2.9		
	1420	ARCE	21 GRF	1107.5	1220.7	108				
	1470	BERL	4	1108	1112	8.5	6.9			
	3000	BERL	4	1109.5	1111.4	7.5	12			
	1420	ARCE	3 S	1110.9	1112	6				
	2800	OTTA	1 S	1111	1111.5	5	6	3		
	2800	OTTA	20 GRF	1140	1147	30	2.2	1.1		
	2800	OTTA	1 S	1316	1317.5	3	2.8	1.2		
	18	MCMA	6 S	1652	1703	17			2	
	18	MCMA	6 S	1714	1716	3			1	
	8800	SGMR	3 S	1724.7	1725.4	6.3	108	43.2		
	10500	BERN	3 S	1724.8	1725.3	10	33	96		
	2800	OTTA	1 S	1724.9	1725.5	1.5	8.2	2		
	9400	HUAN	3 S	1725	1725.8	1.3	117.9	47.5		R
	2695	SGMR	3 S	1725.1	1725.5	2.9	11.2	4.5		
	4995	SGMR	3 S	1725.1	1725.4	6.1	49	19.6		
	15400	SGMR	3 S	1725.2	1725.5	1.8	39.1	15.6		
	9480	HUAN	29 PBI	1726.3	1726.3	23	16.4	7.7		O
	2800	OTTA	28 PR E	1800		101	6.4			
	245	SGMR	49 GB	1914	1947	146	1330	532		CONT
	4995	BCUL	28 PRE	1915.5	1928.5	24	148	49		
	9400	HUAN	47 GB	1916.1	1953	98.9	1007	334.8		LOROL
	4995	SGMR	47 GB	1917	2015.3	128	1180	472		2,4,3G,
	2695	BCUL	49 GB	1917 E	1923.5	113 D	1930	643		
	2695	SGMR	47 GB	1917	2015.1	128	2200	880		CONT
	8800	SGMR	47 GB	1917.1	1954	127.9	870	348		CONT
	1420	BCUL	49 GB	1917.5E	2020.5	121.5D	4314	1438		
	410	SGMR	49 GB	1918.8	2003.2	141.2	6500	2600		2,4,3G,
	606	SGMR	47 GB	1919	2001.5	127.5	20400	8160		CONT
	1415	SGMR	47 GB	1919	2022.5	127	7220	2890		2,4,3G,
	15400	SGMR	3 S	1919	1954.4	126	344	138		2,4,3G,
	18	MCMA	41 F	1927	1951	73 D			2	
	4995	BCUL	49 GB	1939.5	1953.5	83	837	279		
	2800	OTTA	47 GB	1941	2015	84	1665	584		
	200	HIRA	48 C	1950 E	2100 U	130 D	300 U			ML,SUNRISE
	100	HIRA	48 C	1950 E	2006 U	170 D	1000 U			SL,SUNRISE
	9480	HUAN	29 PBI	2055	2055	26.7	67.2	49.7		O
	2800	OTTA	29 PBI	2105	2105	200	23	7.2		
2	2695	PENT	1 S	0057.2	0057.5	2	8.4	4.2		
	1420	BCUL	28 PRE	0057 E	0108 U	15 D	4	1		
	2695	BCUL	45 C	0106	0106.5	6.5D	31	10		
	2695	PENT	21 GRF	0107		40 D	20			
	1420	BCUL	40 F	0112 E	0117	8.5D	46	15		
	2695	BCUL	28 PRE	0113.5E	0116	2.5D	5	2		
	2800	OTTA	45 C	0115.5	0118.5	20	77	22		
	700	SYDN	40 F	0116	0117.5	4.5				
	200	HIRA		0116	0130		1400			HR
	200	HIRA	48 C	0116	0210	100	8000	3000		ML
	500	HIRA		0116	0119.6		60			WR
	500	HIRA	48 C	0116	0206	99	500	50		NL
	4995	BCUL	45 C	0116.5	0117.5	4 D	30	10		
	1400	SYDN	40 F	0116.5	0118.5	2.8				
	2695	PENT		0116.5	0118.5	9.5	77			
	2695	MANI	3 S	0116.6	0118.7	8.5	89.4	59.6		
	606	MANI	4 S/F	0116.6	0117.6	7.5	41.4	27.6		
	1415	MANI	3 S	0116.6	0118.4	8.5	71.8	47.9		
	4995	MANI	3 S	0116.6	0118.64	8.5	27.5	6.9		
	100	HIRA	48 C	0116	0139	135	11000	3000		WR
	100	HIRA		0116	0210		7000			WR
	2695	PENT		0126	0130	10.5	30			
	606	MANI	22 GRF	0152.6	0206.8	26.6	232.3	154.9		
	700	SYDN	40 F	0158	0207	16				
	606	MANI	4 S/F	0234.3	0235.5	2.5	82.8	55.2		
	700	SYDN	40 F	0234.4	0235.5	5.3				
	5730	IRKU		0332	0346.3		51			R
	5730	IRKU	45 C	0332	0334.7	32	6	7		R
	4995	MANI	3 S	0343.9	0346.7	6.7	62.4	41.6		
	2695	MANI	3 S	0344	0345.9	5.3	23.3	15.5		
	1400	SYDN	40 F	0344.8	0345.2	2.3				

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1978

MAY 1978	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	1415	MANI	3 S	0344.9	0346.5	2.3	14	9.4		
	2950	GORK	4 S/F	0345 E	0346.6	3	103			
	2950	GORK	29 PBI	0345 E	0348	10.1	27			
	8800	MANI	3 S	0345.8	0346.5	1.5	34.5	23		
	606	MANI	3 S	0346	0346.1	.8	11.4	7.6		
	500	HIRA	46 C	0421.1	0423	4.5	115	35		WL
	606	MANI	4 S/F	0421.5	0421.8	3.3	28.5	18.9		
	221	ABST	44 NS	0500	0815.5	240	31			
	10500	BERN	40 F	0507.3	0509	5.5	7	20		
	606	MANI	41 F	0508	0509.8	6.7	259.9	173.3		
	700	SYDN	40 F	0508	0509.8	5.2				
	650	GORK	45 C	0508.8	0510.6U	6.2	150			
	650	GORK		0508.8	0512.4U		150			
	5730	IRKU	1 S	0508	0509.1	4	10	3		R
	200	GORK		0509	0514.2		20			
	200	GORK	46 C	0509	0509.2	6.5	50			
	9100	GORK	2 SF	0509.2	0510	2.2	20	10		
	234	POTS	48	0612.5	0614.5	5.5	8000	150		
	113	POTS	45 C	0612.5	0614.3	17	5500	200		
	8800	ATHN	45 C	0612.6	0616.5		215.7			
	8800	ATHN	45 C	0612.6	0615.2	112.7	128.3	38.5		
	4995	ATHN	45 C	0612.7	0616.5		131.4			
	4995	ATHN	45 C	0612.7	0615.2	112.3	106.6	32		
	228	HARS	47 GB	0613	0614.7	1.8	450	180		
	2695	ATHN	45 C	0613	0615.2	112	84.8	25.4		
	1415	ATHN	45 C	0613	0616.5		63			
	2695	ATHN	45 C	0613	0616.5		75.4			
	1415	ATHN	45 C	0613	0615.4	112	73.5	22.1		
	200	HIRA	46 C	0613.2	0614.5	5	20000	100		WR
	200	HIRA		0613.2	0617		180			WR
	10500	BERN	46 C	0613.2	0615.9	9	48	139		
	500	HIRA	46 C	0613.3	0616.4	7	165	30		O
	650	GORK	4 SF	0613.3	0615	10.7	157			
	9100	GORK	29 PBI	0613.4	0617.6	12.7	46	9.7		
	9100	GORK		0613.4	0615.9		190			
	2950	GORK		0613.4	0616		53			
	2950	GORK	45 C	0613.4	0614.5	8.2	53			
	9100	GORK	46 C	0613.4	0614.5	4.2	121			
	4995	MANI	4 S/F	0613.4	0616	6.4	107	71.4		
	606	MANI	4 S/F	0613.4	0616.3	5.3	11.2	7.5		
	2695	MANI	4 S/F	0613.4	0614.4	6.7	60.3	40.1		
	1415	MANI	4 S/F	0613.5	0614.8	7.2	59.7	39.8		
	5730	IRKU	46 C	0613.5	0614.5	16	55			R
	5730	IRKU		0613.5	0616		88			R
	200	GORK	46 C	0613.5	0614 U	4.5	60			
	200	GORK		0613.5	0616.3		680			
	950	GORK		0613.6	0616		29			
	950	GORK	45 C	0613.6	0614.8	9.8	66			
	8800	MANI	4 S/F	0613.6	0616.2	4.3	163.3	108.9		
	29	UPIC	46 C	0613.7	0614.9	5.8				
	33	UPIC	46 C	0613.8	0614.9	5.7				
	930	BORO	46 C	0613	0615	10	123	14		
	10500	BERN	4 S/F	0634.2	0640.5	27	84	244		
	8800	ATHN	4 S/F	0635.5	0640.7	7.4	455.9	136.8		
	260	ONDR	44 NS	0635 E		512 D	16			
	127	TORN	44 NS	0730 E		150 U				V=1
	245	SGMR	44 NS	0941 E	2221.1	839 D	77.8			3,5,CONT
	410	SGMR	44 NS	0941 E	2152.7	839 D	13.3			3,5,CONT
	200	HIRA	46 C	0636	0642.5	80	250	30		MRML
	33	UPIC	46 C	0637.5	0640.5	4.7				
	113	POTS	45 C	0637	0641.4	22	800	30		
	9100	GORK	21 GRF	0638.3	0643	10.6	37	17		
	29	UPIC	46 C	0638.3	0640.4	3.7				
	2950	GORK	4 SF	0638.4	0640.5	5.7	413			
	228	HARS	47 GB	0638.5	0642.5	6	348	130		
	9500	BERL	4	0638.5	0640.4	9.5	230			
	500	HIRA	46 C	0638.6	0641.3	15	65	25		MR
	2695	ATHN	4 S/F	0638.6	0640.8	4.7	191.9	57.6		
	4995	ATHN	4 S/F	0638.6	0640.7	4.9	360	108		
	1415	ATHN	4 S/F	0638.6	0640.8	4.5	211.7	63.5		
	808	ONDR	4 S/F	0638.6	0640.8	15	50	13		
	2695	MANI	4 S/F	0638.7	0640.6	12.2	243.9	162.6		
	8800	MANI	3 S	0638.7	0640.6	14.9	502.4	334.9		
	650	GORK	3 S	0638.7	0641.1	4.3	43	20		
	650	GORK	29 PBI	0638.7	0643	11	12.5			
	200	GORK	46 C	0638.8	0640.5	5	210			
	3000	BERL	4	0638.8	0640.7	8.2	14			
	9100	GORK	4 SF	0638.8	0640.5	3.8	420			
	200	GORK		0638.3	0642.7		490			
	1415	MANI	4 S/F	0638.8	0640.4	5.8	175.5	117		
	4995	MANI	3 S	0638.8	0640.6	13.2	428.2	285.4		
	5730	IRKU	47 GB	0638	0640.5	20	110			R
	930	BORO	3 S	0638	0641.2	16	54	8		
	100	HIRA		0638	0647		200			O
	100	HIRA	46 C	0638	0641	36	4000	200		O

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	1470	BERL	4		0639	0640.5	8.5	127			
	606	MANI	4	S/F	0639	0640.8	15.2	43.3	28.9		
	234	PQTS	45	C	0639.1	0640.2	4.1	1900	8		
	950	GORK	5	C	0639.2	0641.3	4.9	32	16		
	536	ONDR	46	C	0639.2	0641.2	15	42	19		
	260	ONDR	49	GB	0639		63	219 D	41 D		
	33	UPIC	4	S/F	0654.5	0654.7	.5				
	29	UPIC	4	S/F	0654.6	0655	.7				
	930	BORD	8	S	0704.8	0704.8	.1	38	2		
	5730	IRKU	1	S	0720.7	0720.8	.5	9	3		R
	29	UPIC	4	S/F	0724.1	0725	1.4				
	33	UPIC	4	S/F	0724.3	0724.9	2.2				
	4995	ATHN	1	S	0802.6	0803.5	4.4	2.5	1.5		
	8800	ATHN	3	S	0802.6	0803.6	4.4	17.5	10.5		
	3080	BERL	20		0810	0828.5		7.2			
	9500	BERL	20		0813	0822		5.8			
	9100	ARCE	22	GRF	0816.1	0841.7	88				
	9100	GORK	1	S	0835.5	0836.6	2.3	13	5.5		
	9100	GORK	1	S	0841.1	0841.8	1.4	14	6.7		
	10500	BERN	20	GRF	0926.4	0930.3	15	4	11		
	808	ONDR	45	C	0928.7	0930.2	5.5	16	6		
	606	MANI	4	S/F	0929.8	0932.6	4.3	102.6	68.4		
	536	ONDR	46	C	0929	0932.5	6	124	8		
	9500	BERL	1	S	0930	0931	2.5	4.4			
	3080	BERL	1	S	0930	0930.5	1.5	2.3			
	1470	BERL	1	S	0930	0930.9	2.5	2.4			
	127	TORN	45	C	0959	0959.8	2.5	105	4		
	9500	BERL	1	S	0959	1000	2	5.8			
	1420	ARCE	1	S	0959.1	0959.6	2				
	202	IZMI	5	S	0959.5	0959.5	.5	400	125		
	3080	BERL	3		0959.5	0959.8	1.5	8.6			
	1470	BERL	3		0959.5	1000	1.5	7.2			
	9100	ARCE	1	S	0959.8	1000.2	1				
	930	BORD	8	S	0959	1000	2	27	5		
	808	ONDR	45	C	0959	1000	4	40	10		
	536	ONDR	46	C	0959	1001.8	6	12	3.8		
	536	ONDR	45	C	1114.2	1117.8	5	17	3.8		
	1420	ARCE	2	S/F	1114.8	1115.2	1.6				
	3080	BERL	1	S	1115	1115.7	1	2.3			
	1470	BERL	1	S	1115	1115.5	1.5	4.7			
	808	ONDR	8	S	1115.2	1115.2	.3	39			
	33	UPIC	4	S/F	1115.3	1115.5	1.3				
	29	UPIC	45	C	1115.4	1116.1	1				
	930	BORD	8	S	1115	1115.3	1	25	5		
	29	UPIC	3	S	1132.6	1132.9	.4				
	33	UPIC	3	S	1132.6	1132.7	.5				
	9500	BERL	20		1137	1139	18	4.3			
	1470	BERL	20		1143	1153	17	2.4			
	3080	BERL	20		1146.5	1149.3	15	3.2			
	33	UPIC	42	SER	1155.1	1207.2	12.8				
	29	UPIC	42	SER	1155.1	1155.4	12.4				
	10500	BERN	4	S/F	1214	1219.9	45.5	23	66		
	10500	BERN		S	1214	1234		5	15		
	9400	HUAN	3	S	1215.8	1219.7	16	79.1	17		O
	9500	BERL	4		1216	1220	20	63			
	2695	SGMR	3	S	1218.8	1219.9	5.2	13.5	4.1		SWF
	3000	BERL	4		1219.5	1220	13	20			
	4995	SGMR	3	S	1219.6	1220.1	2	27.7	8.3		SWF
	15400	SGMR	3	S	1219.7	1220	2.3	51	15.3		SWF
	8800	SGMR	3	S	1219.7	1219.9	4.3	68.2	20.5		SWF
	2800	OTTA	3	S	1219.7	1220	2	14.6	4		
	9100	ARCE	3	S	1219.7	1220.1	4				
	9400	HUAN	3	S	1232.9	1233.8	3.1	11.5	4.4		O
	9100	ARCE	1	S	1233.5	1234.4	2.4				
	536	ONDR	45	C	1240.8	1240.8	2	17	2		
	29	UPIC	8	S	1245	1245.3	.4				
	33	UPIC	8	S	1245	1245.1	.4				
	930	BORD	41	F	1451.6	1452	1.1	20	2		
	536	ONDR	4	S/F	1451	1451.8	5	29	2.5		
	8800	ATHN	4	S/F	1455.4	1455.6	1.4	94.5	28.4		
	2800	OTTA	4	S/F	1610.2	1611.1	3	98	25		
	1420	ARCE	4	S/F	1610.2	1610.8	2.7				
	10500	BERN	3	S	1610.3	1611.1	5.5	26	77		
	606	SGMR	47	GB	1610.4	1611.2	4.9	513	154		SWF
	4995	SGMR	3	S	1610.5	1611.1	3.5	88.2	26.5		SWF
	1420	BCUL	45	C	1610.5E	1611	9 D	183	61		
	2695	SGMR	3	S	1610.5	1611.2	3	117	34.9		SWF
	8800	SGMR	3	S	1610.6	1611.2	3.4	80.8	24.3		SWF
	15400	SGMR	3	S	1610.6	1611.3	3.8	51.1	20.4		SWF
	1415	SGMR	3	S	1610.6	1611.4	6.1	125	37.5		SWF
	237	TRST	41	F	1610.7	1611.2	.8	2150			8L
	9400	HUAN	3	S	1610.7	1611.4	1.9	93.9	28.8		L
	8800	ATHN	4	S/F	1610.8	1611.4	3.2	100.1	30		
	4995	ATHN	4	S/F	1610.8	1611.4	2.7	90.2	27.1		
	2695	ATHN	4	S/F	1610.8	1611.4	2.3	94.9	28.5		

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	1415	ATHN	4 S/F	1610.8	1611.5	2.3	186.6	56		
	9100	ARCE	3 S	1610.8	1611.3	2.4				
	33	UPIC	4 S/F	1610.9	1611.5	1.5				
	930	BORD	46 C	1610	1611.2	8	809	12		
	800	KIEL	45 C	1610	1611.5	7	500	90		
	602	KIEL	45 C	1610	1611.5	7	300	80		
	405	KIEL	45 C	1610	1611.5	7	400	50		
	1420	KIEL	45 C	1610	1611.5	5	300	130		
	4995	BCUL	8 S	1610	1610.5	2.5	61	20		
	240	KIEL	45 C	1610	1611.5	6	1000	30		
	245	SGHR	48 GB	1611	1611.1	4.3	3264	979		SWF
	410	SGHR	7 S	1611	1611.1	5.6	373	112		SWF
	2695	BCUL	45 C	1611.5E	1612	5.5D	95	32		
	29	UPIC	4 S/F	1611	1611.7	1.3				
	1420	ARCE	29 PBI	1612.9		6				
	33	UPIC	4 S/F	1613.1	1613.7	1.4				
	2800	OTTA	29 PBI	1613.2	1613.2	7	4.4	2		
	29	UPIC	4 S/F	1613.6	1614	1				
	2800	OTTA	20 GRF	1820	1840	70	3.6	1.8		
	2800	OTTA	20 GRF	2000	2025	60	3	1.5		
	9400	HUAN	1 S	2034.8	2035.8	2.1	9.9	7.7		O
	9400	HUAN	3 S	2118.4	2119.1	1.6	11.5	2.6		L
	2800	OTTA	21 GRF	2200	2201	30	3.8	1.9		
	2800	OTTA	8 S	2202.7	2202.8	0.5	1.8	0.9		
	4995	BCUL	8 S	2306.5	2307.5	2.5	20	7		
	2695	BCUL	3 S	2307.5E	2308	1 D	16	5		
	2695	PENT	3 S	2307.7	2308	1	16.6	8.3		
	1400	SYDN	1 S	2307.9	2308	1				
	1415	MANI	1 S	2307.9	2308.3	.9	9.7	6.4		
	8800	MANI	3 S	2308.1	2308.3	1.2	24.3	16.2		
	2695	MANI	3 S	2308.1	2308.3	1	15	10		
	4995	MANI	1 S	2308.2	2308.3	1.6	8.1	5.4		
	2695	PENT	29 PBI	2308.8	2308.8	22	4.8	2.4		
3	221	ABST	44 NS	0508	0707	240	31			
	260	ONDR	44 NS	0640 E		508 D	44	3.5		
	127	TORN	44 NS	0650 E	0937.7	480 D	110			V=1
	245	SGHR	44 NS	0940 E	1908.8	841 D	440.8			CONT
	410	SGHR	44 NS	0940 E	1909	841 D	17.8			3,4,5,
	240	KIEL	44 NS	1440	1648	140	1000	50		
	100	HIRA	44 NS	1950 E	2130	820 D	350	150		SL
	200	HIRA	44 NS	1950 E	2111	820 D	20	10		ML
	208	VORO	44 NS	2100 E	2111	240 D	20	8		
	9100	GORK	1 S	0541.6	0543.4	3.9	10	5		
	10500	BERN	1 S	0627.3	0628.3	3.5	3	10		
	3100	CRIM	24 R	0657	0747		7			
	113	POTS	45 C	0658.3	0659.5	1.7	300	35		
	33	UPIC	46 C	0659.1	0659.5	3.3				
	29	UPIC	46 C	0659.2	0659.8	3.3				
	33	UPIC	46 C	0705.5	0707.1	6.6				
	202	IZMI	25 R	0706	0709.5	5	35	16		
	29	UPIC	46 C	0706	0707.9	5.9				
	9100	GORK	20 GRF	0727.2	0748.9	25	13	4.7		
	29	UPIC	42 SER	0936.7	0938	13.3				
	33	UPIC	42 SER	0936	0937.5	14.5				
	2800	OTTA	27A RF	1115		255	4.4	3.6		
	2800	OTTA	24 R	1115	1155	40	4.4	2.2		
	9100	ARCE	21 GRF	1149.5	1232.3	161				
	113	POTS	45 C	1149	1226	87	30	10		
	29	UPIC	42 SER	1150.4	1157.5	56.4				
	33	UPIC	42 SER	1150	1157.3	56.7				
	2800	OTTA	24P R	1155		165	4.4			
	127	TORN	48 C	1155 U	1208	40 U	370			
	3100	CRIM	1 S	1156.5	1159	4	6	2		
	1470	BERL	4	1158	1159	3	1.7			
	2800	OTTA	1 S	1158.5	1159.2	2	3.6	1.8		
	3000	BERL	4	1158.5	1202.5	5	15			
	113	POTS	48	1206.5	1208.7	7.7	200	20		
	8800	ATHN	4 S/F	1220	1220.4	5.7	148.3	44.5		
	113	POTS	45 C	1225.8	1226.8	2.9	200	20		
	4995	ATHN	3 S	1227.3	1228.8	4.6	15.5	4.6		
	10500	BERN	46 C	1227.3	1228.7	7	11	35		
	9400	HUAN	4 S/F	1227.4	1228.7	7.6	35.4	14.7		L
	8800	ATHN	4 S/F	1227.4	1228.8	4.6	71.2	21.3		
	9500	BERL	4	1227.5	1228.2	6.5	37			
	8800	SGHR	3 S	1227.7	1228.5	4.5	49.5	14.9		5,CONT
	4995	SGHR	1 S	1228	1229.5	5.6	8.4	2.5		5,CONT
	9100	ARCE		1228.2	1228.7	1.2				
	9100	ARCE	45 C	1228.2	1228.7	3.3				
	15400	SGHR	3 S	1228.5	1228.8	2.3	10.3	3.1		5,CONT
	9100	ARCE		1229.4	1229.8	2.1				
	10500	BERN	1 S	1313.3	1314.9	24	4	13		
	9500	BERL	42	1313.5	1314.6	24	13			
	3000	POTS	4	1313.5	1314.5	9	29			
	8800	SGHR	3 S	1313.8	1314.7	3	28.5	8.6		4,CONT

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				UT	UT	MINUTES	PEAK	MEAN		
	4995	BCUL	4 SF	1313	1314	3.5	37	12		
	2695	SGMR	3 S	1314	1315	4	14	4.2		4,CONT
	2800	OTTA	3 S	1314	1314.9	4	15.6	5.2		
	3100	CRIM	3 S	1314	1315	3	34	11		
	9400	HUAN	3 S	1314.1	1314.7	1.3	20	10.9		O
	4995	ATHN	4 S/F	1314.2	1315.1	1.9	56.7	17		
	9100	ARCE	1 S	1314.4	1315	1.3				
	2695	ATHN	3 S	1314.5	1315	2.8	11.4	3.4		
	8800	ATHN	3 S	1314.5	1315.1	1.4	23.7	7.1		
	2650	OWIN	1 S	1314	1315	3	15	5		
	29	UPIC	3 S	1330.6	1330.9	.5				
	33	UPIC	3 S	1330.6	1330.7	.4				
	2800	OTTA	20 GRF	1415	1419	17	7.6	2.6		
	113	POTS	45 C	1421.9	1422.1	.7	280	70		
	9400	HUAN	3 S	1426.3	1429	8.6	21.6	6.8		L
	9100	ARCE	1 S	1426.9	1429.4	5.8				
	2800	OTTA	26 FAL	1440	1530	50	-4.4	-1.5		
	930	BORD	8 S	1559.4	1559.4	.1	16	1		
	240	KIEL	45 C	1651	1657	13	2200	60		
	237	TRST		1652.2	1659.8		8200			48L
	237	TRST	47 GB	1652.2	1656.5	15.8D	7100			40L
	4995	SGMR	3 S	1653.2	1657	25.7	293.7	117.6		3G,4,CONT,
	4995	BCUL	46 C	1653	1656	11	266	89		
	2695	SGMR	3 S	1654.9	1657.7	23.7	179	71.6		SWF
	10500	BERN		1654.9	1700.2		68	198		
	10500	BERN	46 C	1654.9	1656.9	60	50	145		
	405	KIEL	45 C	1654	1657.5	11	130	60		
	2800	OTTA	4 S/F	1655	1657.5	9	169	53.5		
	9100	ARCE	46 C/F	1655.2	1700.5	8.6				
	9100	ARCE		1655.2	1657.1	4.4				
	1420	BCUL	46 C	1655.5E	1656.5	14 D	123	41		
	29	UPIC	46 C	1655.8	1700.1	6.6				
	930	BORD	46 C	1655	1657.6	12	55	8		
	1415	SGMR	3 S	1656	1657.4	11.7	186	74.5		3G,4,CONT,
	33	UPIC	46 C	1656.1	1657.7	6.5				
	8800	SGMR	3 S	1656.2	1700.4	22.6	273	109.2		SWF
	15400	SGMR	3 S	1656.4	1700.4	15.8	83.2	33.3		3G,4,CONT,
	2695	BCUL	46 C	1656.5E	1658.5	6.5D	165	55		
	2695	ATHN	4 S/F	1656.6	1657.9	9.3	171.5	51.4		
	606	SGMR	3 S	1656.6	1700.4	10.3	55	22		SWF
	245	SGMR	6 S	1656.6U	1700.6	4 D	223	89.1U		SWF
	410	SGMR	6 S	1656.6U	1700.6	4 D	97.3	28.9U		3G,4,CONT,
	8800	ATHN	4 S/F	1656.7	1700.5	9.2	359	108		
	4995	ATHN	4 S/F	1656.7	1700.5	9.2	305	91.5		
	1415	ATHN	4 S/F	1656.8	1657.8	9.1	150.1	45		
	602	KIEL	45 C	1656	1700	11	100	80		
	1420	KIEL	45 C	1656	1657.5	10	290	130		
	800	KIEL	45 C	1656	1657.5	10	130	90		
	1420	ARCE	4 S/F	1656	1657.1	4				
	9100	ARCE		1659.6	1700.5	4.2				
	2695	BOUL	29 PBI	1703	1703	20.5D	16	5		
	9100	ARCE	29 PBI	1703.8		11.5				
	2800	OTTA	29 PBI	1704	1704	45	9.6	3.2		
	4995	BCUL	30 PBI	1704	1705.5	11	8	3		
	4995	SGMR	20 GRF	1813.5	1816.8	16.5	12.5	5		CONT
	2800	OTTA	20 GRF	1814	1816.5	25	9.6	2.6		
	2695	SGMR	20 GRF	1814	1816.5	16	9.2	4.6		CONT
	9400	HUAN	22 GRF	1814	1853.6	73.7	15.4	5.6		O
	2800	OTTA	40 F	1930.5	1931.9	3	5.8			
	15400	SGMR	3 S	2017	2020.8	5	32.9	13.1		CONT
	2800	OTTA	3 S	2019.5	2020.5	2.5	67	23		
	8800	SGMR	3 S	2019.5	2020.6	5.5	98	39.2		CONT
	4995	SGMR	3 S	2019.7	2020.5	6.3	134	53.6		CONT
	2695	SGMR	3 S	2020	2020.8	5	66.6	26.7		CONT
	9400	HUAN	4 S/F	2020	2020.7	19.3	86.2	24.6		R
	2800	OTTA	29 PBI	2022	2022	14	8	2.2		
	9400	HUAN	3 S	2134	2135.2	2.7	16.9	8.2		L
	2695	PENT	22 GRF	2355	2427	100 D	7.2			
4	2930	VORO	3 S	0148	0150	4	17			
	5730	IRKU	23 GRF	0247.8	0257.5	40	72	11		
	4995	MANI	3 S	0255.9	0257.1	5.9	32.4	21.6		
	8800	MANI	4 S/F	0255.9	0257	6.8	165.4	110.3		
	200	GORK	43 NS	0336 E		564		5		
	221	ABST	44 NS	0500	0510	240	24			
	202	IZMI	44 NS	0600		360	50			
	127	TORN	44 NS	0640 E		500 D				V=1
	260	ONDR	44 NS	0640 E		508 D	178	12		
	33	UPIC	43 NS	0831.3	1103.2	307.7				
	29	UPIC	43 NS	0831.5	1103.7	308.3				
	410	SGMR	44 NS	0939 E	1851	843 D	20.4			3,5,CONT
	245	SGMR	44 NS	0939 E	1900.2	843 D	274			3,5,CONT
	100	HIRA	44 NS	1950 E	0510	820 D	300	130		ML
	200	HIRA	44 NS	1950 E	0120	820 D	90	40		ML
	208	VORO	44 NS	2100 E	2258	240 D	40	22		

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	5730	IRKU	1 S	0340.5	0341	1.5	6			L
	234	POTS	45 C	0609.1	0609.6	1.1	500	100		
	2950	GORK	1 S	0656.9	0657	1.3	6.9	3		
	9100	GORK	1 S	0658	0659.3	4.2	14	4.8		
	9100	ARCE	22 GRF	0830.5	1000.1	180				
	10500	BERN	22 GRF	0927.8	0957.5	57	8	24		
	9500	BERL	4	0945	0946	2.5	13			
	9100	GORK	22 GRF	0945.6	0957.6	27.6	34	11		
	8800	ATHN	20 GRF	0952.4	0957.7	15.8	29.2	17.5		
	9500	BERL	4	0955	0957	16	20			
	3000	BERL	4	0956.8	0957.3	8.2	5.6			
	2950	GORK	1 S	0956.9	0957.4	.5	9.3	4.5		
	2695	ATHN	1 S	0956.9	0957.2	3	6.7	2		
	1470	BERL	1 S	0957	0957.4	1	3			
	4995	ATHN	20 GRF	0957.2	0959.7	10.4	9.2	5.5		
	930	BORD	8 S	0957.3	0957.3	.1	31	1		
	1420	ARCE	1 S	0957	0957.3	1				
	2800	OTTA	20 GRF	1125	1152	55	3.4	1.7		
	408	TRST	42 SER	1147	1147.7	.9	42			
	9500	BERL	4	1154	1154.5	4.5	7.1			
	113	POTS	45 C	1154.2	1154.7	5.8	250	40		
	9100	ARCE	22 GRF	1225.9	1308.4	82.5				
	3000	BERL	20	1232	1309	83	13			
	9500	BERL	22	1232	1430	148 D	16			
	3100	CRIM	3 S	1236	1315		15	5		
	8800	SGHR	20 GRF	1242.2	1243	17.3	11	5.5		CONT
	2800	OTTA	21 GRF	1250	1310	70	9.4	4.7		
	2800	OTTA	1 S	1332	1333	2.5	3.6	1.6		
	113	POTS	45 C	1334	1339	6	700	30		
	18	MCMA	6 S	1334	1337	5			1	
	9400	HUAN	20 GRF	1403.6	1405.3	37.1	8.2	6.7		O
	9100	ARCE	22 GRF	1404.8	1405.7	36				
	9400	HUAN	3 S	1552.1	1554	5.5	11.4	3.6		O
	10500	BERN	20 GRF	1613.5	1623.2	19.5	5	15		
	9400	HUAN	21 GRF	1613.7	1617.2	18.4	13.1	5.6		O
	9100	ARCE	22 GRF	1614.1	1623.3	23.5				
	9400	HUAN	2 S/F	1622.1	1622.8	1.7	9.8	3.9		O
	10500	BERN	22 GRF	1657.2	1658.1	10.5	5	15		
	9400	HUAN	4 S/F	1657.7	1658.2	2.6	14.7	4.7		O
	2800	OTTA	21 GRF	1735	1820	100	3	1.5		
	18	MCMA	41 F	1747	1841	87			2	
	9400	HUAN	20 GRF	1802.8	1815.2	21.3	13.1	6.6		O
	245	SGHR	49 GB	1831	1840.3	14	666	266		5,CONT
	410	SGHR	7 S	1834	1840	8	410	164		5,CONT
	2800	OTTA	1 S	1839	1840	2	3	1.5		
	2800	OTTA	20 GRF	1915	1923	30	3	1.5		
	9400	HUAN	4 S/F	2020.7	2022.4	4.7	14.7	7.5		O
	2800	OTTA	20 GRF	2105		17	2	1.6		
5	2930	VORO	3 S	0100	0105	10	27			
	200	GORK	44 NS	0300		600		10		
	221	ABST	44 NS	0500	0814	240	47			
	202	IZMI	44 NS	0600		360	70			
	127	TORN	44 NS	0600 E	1029 U	530 D	420 D			V=1
	29	UPIC	43 NS	0614.5	1028.7	630.5				
	33	UPIC	43 NS	0614.6	1027.6	630.6				
	260	ONDR	44 NS	0636 E		513 D	158	8		
	410	SGHR	44 NS	0937 E	1714.3	846 D	18.9			3,5
	245	SGHR	44 NS	0937 E	1643.7	846 D	388			3,5
	208	VORO	44 NS	2100 E		240 D		6		
	9100	GORK	1 S	0424.7	0425.7	2.9	8.7	4		
	9100	GORK	1 S	0458.1	0458.6	1.1	8.7	4		
	9100	GORK	1 S	0541	0541.6	1	6	3		
	8800	ATHN	4 S/F	0557.8	0608.2	83.9	53.4	16		
	4995	ATHN	20 GRF	0558.1	0623.3	63.9	24	14.4		
	10500	BERN	3 S	0603.8	0608	11.5	18	29		
	8900	BERN	3 S	0603.8	0608	11.5	13	35		
	8400	BERN	3 S	0603.8	0608	11.5	12	32		
	9100	GORK	21 GRF	0603.9	0609.4	8.9	16	4		
	9100	GORK	3 S	0607.6	0608.1	1.6	31	15		
	9100	GORK	1 S	0649.9	0650.3	.8	7.8	3.5		
	113	POTS	45 C	0654.9	0655.8	1.8	1700	50		
	202	IZMI	6 S	0655	0655.7	1	1200	500		
	200	GORK	8 S	0655.1	0656	1.1	960			
	234	POTS	45 C	0655.3	0655.8	1.9	600	25		
	127	TORN	47 GB	0655 U	0655.9	1.5	2600	200		
	9100	GORK	1 S	0706.1	0706.8	1.8	6.8	3		
	9100	GORK	20 GRF	0710.3	0716.5	8.2	11	5.5		
	536	ONDR	3 S	0713	0713	.2	15			
	234	POTS	45 C	0745.3	0745.4	.2	200	30		
	9100	ARCE	22 GRF	0915	0939	43				
	9100	GORK	1 S	0932.1	0932.4	.8	8	4		
	930	BORD	8 S	1002.2	1002.3	.2	27	2		
	3100	CRIM	3 S	1005	1007	12	17 D	6		
	234	POTS	45 C	1009.5	1009.5	.1	140	35		

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	9100	GORK	21 GRF	1019.9	1031	31	19	7		
	9100	ARCE	21 GRF	1019	1034.5	48				
	200	GORK		1024	1035.4		1870			
	200	GORK	46 C	1024	1028.8	13	6000			
	113	POTS	45 C	1024.5	1028.5	14	14000			
	29	UPIC	49 GB	1025.9	1028.7	14.1				
	408	TRST	49 GB	1025.9	1028.6	10.6	700			
	237	TRST		1026	1028.2		1250			26L
	237	TRST	47 GB	1026	1027.2	2.8	5700			100L
	33	UPIC	49 GB	1026.1	1027.6	13.2				
	234	POTS	45 C	1026.1	1028.3	13	2500			
	602	KIEL	45 C	1026.5	1028	11	190	90		
	228	HARS	47 GB	1026.8	1028.2	5.7	2300 U	500 U		
	228	HARS		1026.8	1030.5	.3	230			
	228	HARS		1026.8	1029.1	.3	200			
	240	KIEL	45 C	1026	1029	13	2200	60		
	405	KIEL	45 C	1026	1029	11	950	70		
	260	ONDR	46 C	1026		11	222 D			
	1470	BERL	4	1027	1028.4	23	1130			
	3080	BERL	4	1027	1028.4	15	430			
	650	GORK	45 C	1027	1028.2	9	88			
	650	GORK		1027	1034		16			
	2950	GORK	4 SF	1027.3	1028.5	2.4	470			
	202	IZMI	47 GB	1027.3	1030	5	2750	1000		
	8900	BERN	23 GRF	1027.4	1028.3	28.5	166	475		
	8400	BERN	23 GRF	1027.4	1028.3	28.5	189	501		
	10500	BERN	23 GRF	1027.4	1028.3	28.5	126	366		
	245	SGHR	48 GB	1027.5	1029.5	9.5	3490	1396		5
	410	SGHR	48 GB	1027.5	1029.5	8.8	589	263		5
	606	SGHR	3 S	1027.5	1029.5	8.1	102	41		5
	950	GORK	3 S	1027.5	1028.1	4	196	98		
	9500	BERL	4	1027.7	1028.3	21	800			
	1415	SGHR	3 S	1027.7	1028.2	7	115	46		5
	9100	ARCE	3 S	1027.7	1028.5	4				
	9100	GORK	4 S/F	1027.9	1028.5	3.1	502			
	2650	OWIN	45 C	1027		5	120 D			
	10715	OWIN	45 C	1027		5	117			
	800	KIEL	45 C	1027	1028.5	11	400	90		
	1420	KIEL	45 C	1027	1028	9	220	130		
	1420	ARCE	4 S/F	1027	1027.9	3				
	930	BORD	46 C	1027	1028.2	9	538	12		
	4995	SGMR	3 S	1028	1028.5	8.5	467	187		5
	15400	SGMR	3 S	1028	1028.5	7	93.1	37.2		5
	2695	SGMR	3 S	1028	1028.5	7	200	80		5
	8900	SGMR	3 S	1028	1028.5	7	450	180		5
	1420	ARCE	30 PBI	1030	1030.4	19				
	1420	ARCE	2 S/F	1033.4	1034.2	1.8				
	228	HARS	45 C	1033.5	1034	3	320	150		
	202	IZMI	21 GRF	1033.7	1034	2.7	500	250		
	8900	BERN	3 S	1130	1130.7	2.5	10	28		
	8400	BERN	3 S	1130	1130.7	2.5	12	32		
	10500	BERN	3 S	1130	1130.7	2.5	6	17		
	9400	HUAN	3 S	1130.2	1130.8	1.1	26	10.7		L
	8800	ATHN	3 S	1130.4	1130.8	2.7	23.7	7.1		
	4995	ATHN	3 S	1130.4	1130.9	2.3	20.1	6		
	9100	GORK	1 S	1130.5	1130.9	2.1	22	10		
	2800	OTTA	22 GRF	1210		130	3	1.5		
	9100	ARCE	4 S/F	1312.6	1313.3	1.4				RECORDDISTURBED
	9100	ARCE	29 PBI	1314						
	234	POTS	49	1356.2	1411.5	24	500	1		
	113	POTS	49	1357.1	1403.7	22	2800	35		
	237	TRST		1403.4	1411.7		675			23L
	237	TRST		1403.4	1411.3		1050			22L
	237	TRST		1403.4	1407.9		650			13L
	237	TRST	42 SER	1403.4	1404.1	12.6	265			16L
	237	TRST		1403.4	1415.5		256			13L
	410	SGMR	7 S	1403.5	1415	16	278	111		3G
	245	SGMR	48 GB	1403.5	1411.5	17.5	647	259		3G
	536	ONDR	41 F	1403	1412.3	13	18	1.6		
	228	HARS	45 C	1410.5	1410.8U	1.2	340	100		
	930	BORD	41 F	1412	1414	3	19	2		
	9400	HUAN	20 GRF	1414.6	1421.1	13.7	9.8	5.6		0
	2800	OTTA	240 R	1420	1435	15	3	1.5		
	2800	OTTA	21 GRF	1440	1448	110	4.8	2.6		
	2800	OTTA	1 S	1458		9	1.8	1.1		
	2800	OTTA	1 S	1527.5	1529.4	6.5	2	1		
	9400	HUAN	4 S/F	1536.4	1538	9.7	13	5.5		0
	9400	HUAN	4 S/F	1623	1624.2	2.5	11.4	4.7		0
	2800	OTTA	24 R	1637	1650	13	2.8	1.4		
	2800	OTTA	27A RF	1637		145	2.8	2.5		
	237	TRST	41 F	1643.3	1643.5	.2	508			26L
	930	BORD	8 S	1647.6	1647.6	.1	38	2		
	10500	BERN	32 ABS	1647.9	1648.9	3	10	29		
	1428	ARCE	1 S	1648.4	1648.6	.6				
	9400	HUAN	8 S	1648.5	1648.8	.6	30.9	15.3		L

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	9100	ARCE	1 S	1648.7	1649	5				
	2800	OTTA	24P R	1650		115	2.8			
	930	BORD	8 S	1714.4	1714.4	.1	12	1		
	2800	OTTA	20 GRF	1732	1737	15	2.6	1.3		
	9400	HUAN	21 GRF	1734.8	1738.8	44.5	9.8	6.7		O
	9400	HUAN	3 S	1745	1745.6	1	11.4	9.8		O
	9400	HUAN	3 S	1750.5	1751	.8	13	6.2		L
	9400	HUAN	3 S	1758.8	1759.4	1.5	17.9	12.4		O
	2800	OTTA	1 S	1800.6	1801	1.5	2.8	0.9		
	2800	OTTA	26 FAL	1845	1902	17	-2.8	-1.4		
	2800	OTTA	20 GRF	2000	2023	52	2	1		
	2800	OTTA	22 GRF	2130	2207	95	5.8	2.7		
	18	MCMA	41 S	2159	2208	13			1	
	208	VORO	46 C	2200	2202.5	14	115			
	208	VORO		2208	2205		350 D			
	200	HIRA	46 C	2200	2202.5	3	200	80		ML
	100	HIRA	46 C	2201	2202	8	3000	200		O
	245	SGMR	49 GB	2202.1	2204.6	11.5	1531	459		S
	500	HIRA	46 C	2204	2206	2	75	20		ML
	200	HIRA	46 C	2204	2204.5	5	1000	200		ML
	410	SGMR	6 S	2204.3	2206.3	6.5	103	30.9		S
	1415	SGMR	3 S	2204.4	2204.6	1.6	33	9.9		S
	606	SGMR	3 S	2204.7	2204.8	.3	11.1	3.3		S
	200	HIRA	27 RF	2215	2222	20	6	3		ML
	100	HIRA	27 RF	2219	2230	30	20	10		O
	208	VORO	41 F	2243	2243.5	3	70			
	2930	VORO	3 S	2309	2312	11	25			
	2695	PENT	20 GRF	2320	2345	45	3.4	2.2		
	208	VORO	4 S/F	2331	2332	1	60			
6	2930	VORO	3 S	0000	0004	10	18			
	9100	GORK	1 S	0340.3	0340.8	1.1	12	5.5		
	221	ABST	44 NS	0500	0840	240	87			
	260	ONDR	44 NS	0637 E		511 D	57	3		
	127	TORN	44 NS	0700 E	1108.2	470 D	170			V=1
	410	SGMR	44 NS	0936 E	2025.8	848 D	18.9			3,5,CONT
	245	SGMR	44 NS	0936 E	2158.3	848 D	76.6			3,5,CONT
	5730	IRKU	1 S	0610	0611	4	16			
	9100	GORK	1 S	0640.4	0610.8	1.1	22	11		
	29	UPIC	45 C	0835.6	0836.6	1.1				
	33	UPIC	45 C	0835.7	0836.4	1				
	536	ONDR	4 S/F	0929.5	0931	2.5	31	3.4		
	408	TRST	42 SER	0930.5	0930.6	.4	95			
	606	MANI	8 S	0930.7	0931	.5	23.9	15.9		
	1415	MANI	8 S	0930.8	0930.9	.2	18.9	12.6		
	1470	BERL	3	0930.8	0930.9	.2	14			
	808	ONDR	8 S	0930.8	0930.8	.3	59			
	930	BORD	8 S	0930	0931	2	85	3		
	113	POTS	45 C	1037.7	1037.8	3	120	1		
	33	UPIC	45 C	1046.4	1047.9	1.8				
	29	UPIC	45 C	1046.7	1048.4	1.7				
	29	UPIC	42 SER	1057.6	1104.8	11.6				
	33	UPIC	42 SER	1057.6	1104.5	11.8				
	113	POTS	45 C	1100	1109.7	10	100	10		
	202	IZMI	41 F	1102	1108	8	200			
	237	TRST	41 F	1103	1104.1	1.6	152			16L
	237	TRST	41 F	1107.7	1108	.8	120			24L
	9100	GORK	1 S	1118.2	1118.4	.6	9.5	4.5		
	9500	BERL	20	1153	1200	17	8.7			
	536	ONDR	4 S/F	1204.5	1205.3	2	110	13		
	1420	ARCE	1 S	1214.4	1215.3	2				
	1470	BERL	4	1214.8	1215.2	1.7	4.1			
	408	TRST	42 SER	1214.8	1215.3	.8	690			
	3000	BERL	1 S	1214.8	1215	.7	3.9			
	410	SGMR	48 GB	1215	1215.5	1.4	911	364		3
	245	SGMR	6 S	1215.1	1215.3	1.9	67.9	27.2		3
	1415	SGMR	1 S	1215.1	1215.4	1.3	5.2	2.1		3
	606	SGMR	3 S	1215.3	1215.4	.7	65.8	26.3		3
	113	POTS	1 S	1216.5	1216.6	.2	200	70		
	2800	OTTA	24 R	1217	1245	28	3.8	1.9		
	2800	OTTA	27A RF	1217		225	3.8	3.3		
	2800	OTTA	24P R	1245		165	3.8			
	536	ONDR	42 SER	1251.5	1301	10.5	75			
	410	SGMR	7 S	1300.5	1301.1	.9	334	134		
	2800	OTTA	20 GRF	1300 1	3130	22	2.4	1.6		
	245	SGMR	6 S	1301	1301.1	.3	26.5	10.6		
	930	BORD	3 S	1315	1315.1	2	11	2		
	930	BORD	8 S	1450	1450	.1	15	1		
	2800	OTTA	26 FAL	1530	1602	32	-3.8	-2.2		
	8800	SGMR	3 S	2013	2016.8	81	95	38		5,CONT,SWF
	15400	SGMR	3 S	2013	2016.8	81	85.2	34.1		5,CONT,SWF
	2695	PENT	4 S/F	2013.5	2016.8	11.5	150	46.6		
	2695	SGMR	3 S	2013.7	2016.8	80.3	172	68.8		5,CONT,SWF
	4995	SGMR	3 S	2013.8	2016.6	80.2	110	44		5,CONT,SWF
	1415	SGMR	3 S	2014	2017	80	55.9	22.4		5,CONT,SWF

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	606	SGMR	45 C	2014	2121.8		15.1			S,CONT,SWF
	606	SGMR	45 C	2014	2100		484			S,CONT,SWF
	606	SGMR	45 C	2014	2017	80	128	194		S,CONT,SWF
	9400	HUAN	4 S/F	2014.1	2017.7	13.4	93.1	43.3		R
	200	HIRA	46 C	2019	2020	1	1000	400		WR
	410	SGMR	49 GB	2019.5	2021	72.5	3150	1260		S,CONT,SWF
	245	SGMR	49 GB	2019.5	2121.3		2600			S,CONT,SWF
	245	SGMR	49 GB	2019.5	2100		52			S,CONT,SWF
	245	SGMR	49 GB	2019.5	2021.4	72.5	685	1040		S,CONT,SWF
	410	SGMR	49 GB	2019.5	2121.6		29			S,CONT,SWF
	410	SGMR	49 GB	2019.5	2100		291			S,CONT,SWF
	100	HIRA	46 C	2023	2028.8	13	9000	2000		WL
	2800	OTTA	30 PBI	2025	2025	75	11	5.5		
	200	HIRA	27 RF	2026	2050	125	35	10		WL
	18	MCMA	41 S	2028	2029	8			1	
	100	HIRA	27 RF	2036	2050	135	55	25		O
	200	HIRA	46 C	2054.5	2100	12	70	30		WL
	500	HIRA	45 C	2057.6	2102.4	8	480	300		WL
	2800	OTTA	3 S	2058	2102	11	14.4	5.8		
	208	VORO	48 C	2119.5	2121	3.5	350 D			
	100	HIRA	46 C	2119	2121	5	90000	9999		O
	200	HIRA	46 C	2120	2121	5	2500	600		WR
	2800	OTTA	3 S	2120	2121	3	26	8.6		
	9400	HUAN	3 S	2120.1	2121	2.1	21.2	7.6		O
	208	VORO	46 C	2142	2144.5	7.5	135			
	2800	OTTA	23 GRF	2201	2227	55	9.4	2.4		
	2800	OTTA	1 S	2201.8	2202.5	2.5	4	1.5		
	4995	BCUL	2 SF	2219	2221.5	6	28	9		
	2800	OTTA	1 S	2222	2223	3	3.6	2		
	1420	BCUL	1 S	2259	2300.5	3.5	5	2		
	2695	PENT	1 S	2300	2301	2.5	6.6	3.3		
	2695	BCUL	1 S	2300	2301.5	4	5	2		
	2695	PENT	26 FAL	2318	2350	32	-6.8	-3.4		
	2930	VORO	3 S	2345	2353	10	18			
7	2930	VORO	20 GRF	0025	0040	30	17			
	2930	VORO	3 S	0145	0148	5	22			
	5730	IRKU	2 S	0249.5	0253	10	17	7		R
	5730	IRKU	1 S	0305	0305.8	5	10	4		R
	2950	GORK		0318.2	0359.1		400			
	2950	GORK		0318.2	0353.2		466			
	2950	GORK	46 C	0318.2	0332.9	105	1730			
	2950	GORK		0318.2	0336.2		1600			
	2950	GORK		0318.2	0341.1		1200			
	4995	MANI	47 GB	0319.3	0328.6	50.8	1400	550		
	4995	MANI	45 C	0319.3	0352.9		177.3			
	4995	MANI	47 GB	0319.3	0329.7		1640			
	5730	IRKU		0320	0359.3		89			R
	5730	IRKU		0320	0353.3		162			R
	5730	IRKU		0320	0336		162			R
	5730	IRKU		0320	0334		162			R
	5730	IRKU		0320	0328		162			L
	5730	IRKU		0320	0325		162			R
	5730	IRKU	48 C	0320	0322.9	52	68			R
	2695	MANI	45 C	0321.7	0358.8		176.4			
	2695	MANI	45 C	0321.7	0353.1		196			
	2695	MANI	47 GB	0321.7	0332.7	48.2	765	250		
	2695	MANI	47 GB	0321.7	0335.4		740			
	8800	MANI	46 C	0322.2	0358.5		169.7			
	8800	MANI	46 C	0322.2	0352.8		171.5			
	8800	MANI	47 GB	0322.2	0329.4		3450			
	8800	MANI	47 GB	0322.2	0328.5	39.4	3450	1175		NT
	950	GORK	23 GRF	0322.7		84				
	1415	MANI	46 C	0322.8	0327.5	46.7	330	120		
	1415	MANI	45 C	0322.8	0352.8		151.4			
	9100	GORK	21 GRF	0323 U	0333	78	390			
	606	MANI	47 GB	0324	0330.5	49.2	690	240		
	4995	MANI	45 C	0324	0358.8		175.3			
	606	MANI	47 GB	0324	0352.7		845			
	606	MANI	47 GB	0324	0359.7		1010			
	1415	MANI	45 C	0324	0359.2		176.4			
	500	HIRA		0324.2	0400.3		800			SL
	500	HIRA		0324.2	0352.9		800			SL
	500	HIRA	48 C	0324.2	0330.7	46	1000	120		ML
	650	GORK	47 GB	0324.2	0401	47.8	770			
	9100	GORK		0324.4	0330		1860			
	9100	GORK	46 C	0324.4	0326.8	8.7	672			
	950	GORK		0325.1	0353.2		116			
	950	GORK	46 C	0325.1	0328.9	37.9	193			
	950	GORK		0325.1	0359.9		202			
	35000	NAGO	47 GB	0326	0330	13	870			
	35000	NAGO		0326	0336		204			
	200	GORK		0327	0340.8		5450			
	200	GORK		0327	0331.8		8330			
	200	GORK	47 C	0327	0329.3	114	730			

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	200	GORK		0327	0456.2		420			
	200	GORK		0327	0337.7		7380			
	200	GORK		0327	0409.3		530			
	200	GORK		0327	0358.2		2450			
	200	HIRA		0327	0357.5		2000			ML
	200	HIRA	48 C	0327	0329	115	15000	200		ML
	100	HIRA	48 C	0327	0332	28	80000	9999		O
	228	HARS	47 GB	0328.3	0337 U		1650 D	500		
	1415	ATHN	4 S/F	0339.8	0343.8	51.5	401	120.3		
	2695	ATHN	47 GB	0339.8	0343.1	43.6	774	232.2		
	4995	ATHN	47 GB	0339.8	0342.2	49.4	721	216.3		
	8800	ATHN	47 GB	0339.8	0342.2	49.5	669	200.7		
	35000	NAGO	29 PBI	0339	0339	30	75			
	9100	GORK	4 S/F	0352.2	0353.4	2.7	84	40		
	228	HARS	45 C	0352.3	0353	4.7	600	230		
	228	HARS	45 C	0357.5	0358	6	1200	550		
	9100	GORK	5 S	0357.7	0359.2	3.6	109	50		
	606	MANI	3 S	0417.3	0419.3	5.5	22.2	14.8		
	1415	MANI	3 S	0418	0418.3	1	32.3	21.5		
	2695	MANI	3 S	0418	0418.1	1	19.6	13.1		
	650	GORK		0418.2	0457.2		133			
	650	GORK	41 F	0418.2	0429.5	49.6	250			
	650	GORK		0418.2	0440.6		155			
	1415	MANI	3 S	0423.8	0429.5	7.4	19.1	12.7		
	606	MANI	4 S/F	0425.9	0428.8	5	274.7	183.1		
	606	MANI	3 S	0439.4	0440.3	2.1	228.3	152.2		
	1415	MANI	3 S	0439.4	0440.4	1.9	22.1	14.7		
	606	MANI	4 S/F	0451.8	0456.2	6.7	117.2	78.1		
	1415	MANI	3 S	0452	0455.8	9.4	88.2	58.8		
	950	GORK	23 GRF	0452.2	0505.5	26	12.7			
	4995	ATHN	4 S/F	0453.8	0456.2	14.5	105.8	31.7		
	9100	GORK	4 S/F	0453.8	0456.5	5.7	74	19		
	950	GORK	4 S/F	0454.7	0455.4	2.7	97			
	2695	MANI	3 S	0455.3	0455.9	5.7	68.6	45.7		
	8800	MANI	3 S	0455.3	0455.8	2.7	78.8	52.5		
	4995	MANI	3 S	0455.3	0455.9	5.7	63	42		
	2695	ATHN	4 S/F	0455.5	0456.2	13.7	68	20.4		
	1415	ATHN	4 S/F	0455.7	0457.1	7.2	75.1	22.5		
	8800	ATHN	4 S/F	0455.7	0456.1	14	69	20.7		
	221	ABST	44 NS	0600	0846	180	9			
	260	ONDR	44 NS	0606 E		540 D	30	5		
	200	GORK	43 NS	0636		192		5		
	127	TORN	44 NS	0650 E	0818.7	480 D	32			V=0
	245	SGMR	44 NS	0935 E	2124.5	850 D	253			CONT
	410	SGMR	44 NS	0935 E	1710.1	850 D	115			2,3,4,5,
	200	GORK	27 RF	0703	0711.8	61	20	10		
	29	UPIC	2 S/F	0739.8	0740	.5				
	33	UPIC	4 S/F	0739.8	0739.8	.9				
	33	UPIC	42 SER	0846.2	0900.1	26.7				
	29	UPIC	42 SER	0846.6	0900.4	26.2				
	237	TRST	41 F	0912.5	0912.5	.3	178			11L
	3100	CRIM	1 S	0927	0927.2	1	7	2		
	113	POTS	45 C	0936.6	0937.5	2	1100	25		
	234	POTS	45 C	0936.9	0937.2	.7	1300	30		
	237	TRST	41 F	0936.9	0937.3	.8	2120			16L
	202	IZMI	45 C	0937	0937	1	3200	1000		
	228	HARS	45 C	0937	0937.3	.8	1200	600		
	29	UPIC	8 S	0937	0937.3	.5				
	33	UPIC	8 S	0937	0937	.9				
	33	UPIC	46 C	1000.6	1001.7	5.3				
	29	UPIC	46 C	1000.8	1002.1	4.5				
	113	POTS	2	1001.1	1002.8	4	420	4		
	202	IZMI	41 F	1003.2	1004.5	2.8	70			
	237	TRST	41 F	1004.3	1004.3	.4	117			7L
	33	UPIC	42 SER	1111.3	1112.9	15.5				
	9500	BERL	20	1111	1114.3	59	17			
	9100	ARCE	20 GRF	1112	1114.2	32.5				
	9100	ARCE	22 GRF	1215.4	1232	83				
	113	POTS	48	1225.7	1233.9	8.5	1800	5		
	9500	BERL	21	1225	1328.5	144	17			
	536	ONDR	41 F	1225	1226	8.5	20			
	33	UPIC	42 SER	1227	1233.4	8				
	2800	OTTA	2 S/F	1227	1231	6	3.8	1.6		
	18	MCMA	41 F	1227	1231	17			1	
	3000	BERL	1 S	1230	1230.9	2	3.8			
	1420	ARCE	1 S	1230.7	1230.8	.6				
	9400	HUAN	3 S	1231.4	1231.7	.8	18.2	10.7		O
	9500	BERL	3	1231.5	1231.7	.7	23			
	9400	HUAN	2 S/F	1236.4	1238.3	3.7	9.9	7.4		O
	9400	HUAN	21 GRF	1326.5	1344.4	39.2	9.9	4.6		O
	9400	HUAN	3 S	1326.3	1328.8	1.3	13.2	8.6		O
	9100	ARCE	22 GRF	1341.8	1344.3	39				
	9400	HUAN	1 S	1355.7	1356	1.1	7.4	4.7		L
	9500	BERL	20	1432	1437	15	5.8			
	2800	OTTA	21 GRF	1500	1705	260	8.6	4.3		

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	9100	ARCE	21 GRF	1511.6	1609.5	82				
	1420	ARCE	21 GRF	1512	1609	82				
	245	SGMR	48 GB	1531	1534	5	603	241		3
	237	TRST	42 SER	1531	1531.4	3.3	370			9L
	237	TRST		1531	1533.7		525			16L
	410	SGMR	7 S	1531.3	1534	4.7	270	108		3
	18	MCMA	41 F	1531	1557	56			2	
	1420	BOUL	1 S	1532.5	1533.5	9	5	2		
	29	UPIC	42 SER	1533.1	1551.1	24.1				
	33	UPIC	42 SER	1533.3	1550.8	24.5				
	2800	OTTA	1 S	1533.5	1534	3	4.4	1.5		
	1420	BOUL	1 S	1541	1543	3	7	2		
	1420	ARCE	2 S/F	1542.5	1543.5	1.6				
	2800	OTTA	2 S/F	1543	1543.6	1.5	7.6	1.5		
	2695	SGMR	3 S	1543.5	1555.4	22.5	149	59.6		SWF
	2650	OWIN	45 C	1544	1550	16	85	40		
	10715	OWIN	45 C	1545	1548	9	29			
	4995	BOUL	46 C	1548.5	1553.5	26	142	47		
	8400	BERN	4 S/F	1548.7	1552.7	50	50	134		
	8900	BERN	4 S/F	1548.7	1552.7	50	50	136		
	4995	ATHN	40 F	1548.8	1552.2	21.6	224.5	112.3		
	8800	SGMR	3 S	1548.8	1553.8	16.2	155	62		SWF
	2695	ATHN	40 F	1548.8	1554.8	21	117.3	58.6		
	1420	ARCE	45 C	1548.9	1551.6	17				
	1420	BOUL	21 GRF	1548	1551	17	37	12		
	15400	SGMR	3 S	1549	1553	10	45.7	18.3		2,4,CONT,
	8800	ATHN	40 F	1549	1552	20	132.9	66.4		
	2800	OTTA	45 C	1549	1555.3	17	110	44.6		
	4995	SGMR	3 S	1549.4	1554.2	16.5	205	82		2,4,CONT,
	410	SGMR	6 S	1549.5	1555.4	17.5	146	58.4		2,4,CONT,
	9400	HUAN	45 C	1549.5	1552.6	14.8	127.2	63.3		R
	1415	ATHN	40 F	1549.5	1551.4	20.3	32.6	16.3		
	9100	ARCE	4 S/F	1549.8	1552.7	9				
	930	BORD	40 F	1549	1551	15	40	18		
	240	KIEL	47 GB	1549	1601	25	600	60		
	800	KIEL	45 C	1549	1551.5	19	150	100		
	602	KIEL	45 C	1549	1552	19	190	90		
	1420	KIEL	45 C	1549	1552	17	160	130		
	405	KIEL	45 C	1549	1551.5	15	180	80		
	606	SGMR	3 S	1550	1557	15	141	56.4		SWF
	1415	SGMR	3 S	1550	1558	16	43.5	17.4		2,4,CONT,
	245	SGMR	49 GB	1550.5	1601	19.5	852	341		SWF
	2695	BOUL	46 C	1550.5E	1556.5	30.5D	87	29		
	237	TRST	47 GB	1550.6	1551.1	23.5	400			14L
	237	TRST		1550.6	1600.7		760			16L
	9100	ARCE	29 PBI	1558.8	1559	9.5				
	33	UPIC	41 F	1559.6	1605.2	20.5				
	29	UPIC	41 F	1602.1	1608.1	11.9D				
	9400	HUAN	30 PBI	1602.3	1602.3	25.6	28.1	18.4		0
	228	HARS	45 C	1603	1600.6	1.3	600	200		
	2800	OTTA	30 PBI	1606	1606	35	7.6	3.8		
	9400	HUAN	1 S	1608.5	1609.3	1	8.3	3.3		0
	2800	OTTA	1 S	1609	1610	3	3	1.5		
	237	TRST	47 GB	1636.5	1653.5	30.3	106			30L
	245	SGMR	6 S	1637	1654.2	59	94	38.6		CONT,SWF
	410	SGMR	6 S	1637.6	1710.1	58.4	105.4	42.1		CONT,SWF
	9400	HUAN	28 PRE	1652.1	1701.4	9.3	9.1	5.1		0
	15400	SGMR	3 S	1700.3	1705.4	23.7	135.2	54.5		CONT,SWF
	8800	SGMR	3 S	1700.6	1705.4	26.6	132.8	53.1		CONT,SWF
	4995	SGMR	20 GRF	1700.7	1705.3	25.6	22.7	9.1		CONT,SWF
	2695	SGMR	20 GRF	1701.3	1707	13.9	6.8	2.7		CONT,SWF
	9400	HUAN	46 C	1701.4	1705.2	6	163.5	97.7		L
	4995	BOUL	4 SF	1701.5	1704.5	4	19	6		
	9100	ARCE	4 S/F	1701.9	1705.5	5.2				
	9100	ARCE	29 PBI	1707.1		27.5				
	9400	HUAN	30 PBI	1707.4	1707.4	72	43	16.8		0
	606	SGMR	3 S	1709.3	1709.4	.7	32.5	13		CONT,SWF
	1420	BOUL	1 S	1709	1710	1.5	3	1		
	2695	PENT	1 S	1710	1710.5	2	2.8	1.4		
	9400	HUAN	3 S	1710.8	1711.3	1	24.5	12.2		0
	18	MCMA	6 S	1711	1713	3			1	
	9400	HLAN	3 S	1713.5	1714	1	19.8	9.7		0
	4995	BOUL	4 SF	1733	1735	3	11	4		
	2695	BOUL	4 SF	1735	1737	2.5	23	8		
	606	SGMR	3 S	1754	1758.5	7.1	251	101		CONT
	1420	BOUL	1 S	1757.5	1758.5	2.5	2	1		
	410	SGMR	6 S	1757.8	1758.8	3.1	46.8	18.7		CONT
	2695	SGMR	1 S	1758	1759.3	2.3	7.2	2.9		CONT
	8800	SGMR	3 S	1758.2	1759.2	1.8	10.3	4.1		CONT
	4995	SGMR	1 S	1758.2	1759.2	1.9	7	2.8		CONT
	2800	OTTA	2 S/F	1758.3	1759.1	3.5	5.8	1.6		
	2695	BOUL	2 SF	1758.5	1759.5	2	6	2		
	4995	BOUL	8 S	1758	1758.5	1	3	3		
	2800	OTTA	26 FAL	2035	2100	25	-3.8	-1.9		
	18	MCMA	6 S	2123	2125	4			1	

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8	2930	VORO	3 S	0018	0022	7	18			
	4995	MANI	4 S/F	0039.8	0041.8	6.8	52.1	34.8		
	4995	BOUL	45 C	0039	0041	6	56	19		
	2695	PENT	1 S	0040	0042	5	6	2.6		
	2695	BOUL	1 S	0040.5	0042.5	6.5	7	2		
	2930	VORO	3 S	0040	0042	5	18			
	35000	NAGO	20 GRF	0050	0108	60	29			
	2695	MANI	4 S/F	0159.6	0211.7	17.4	87	58		
	500	HIRA	46 C	0159.7	0209.8	20	60	20		WL
	700	SYDN	40 F	0159.8	0203	13.7				
	1400	SYDN	40 F	0200.2	0208.9	15.6				
	606	MANI	4 S/F	0200.2	0203.4	13.8	53	35.4		
	1415	MANI	4 S/F	0200.3	0209.1	14	35.5	23.7		
	4995	MANI	4 S/F	0200.3	0211.9	16.6	23.7	15.8		
	200	HIRA	46 C	0200	0215	70	120	40		WL
	35000	NAGO	20 GRF	0205	0216	75	16			
	100	HIRA	46 C	0208	0230	70	250	70		WL
	500	HIRA	42 SER	0324	0329	6	45			G
	5730	IRKU	2 S	0326.5	0328	5	78	13		L
	100	HIRA	46 C	0326.5	0327.2	7	7000	500		WL
	2950	GORK	4 S/F	0326.5	0327.9	7.2	107			
	950	GORK	6 S	0327	0329	6.6	8.5	4.2		
	1400	SYDN	3 S	0327	0328	5				
	9100	GORK	4 S/F	0327.2	0327.9	4.4	55	10		
	1415	MANI	4 S/F	0327.2	0328.1	3.8	21.1	14		
	8800	MANI	4 S/F	0327.2	0328	2.5	47.7	31.8		I
	2695	MANI	4 S/F	0327.3	0327.9	4.2	64.7	43.1		
	4995	MANI	4 S/F	0327.3	0328	4.4	78.3	52.1		
	606	MANI	4 S/F	0327.6	0329.2	2.8	52.4	34.9		
	260	ONDR	44 NS	0630 E		520 D	84	6		
	410	SGMR	44 NS	0934 E	1122.4	852 D	8.5			2,3,4,5,
	245	SGMR	44 NS	0934 E	1929.8	852 D	158			CONT
	202	IZMI	41 F	0633.8	0634.5	1.7	110			
	536	ONDR	3 S	0709.7	0709.7	.4	25			
	202	IZMI	41 F	0710	0710.5	1	340			
	29	UPIC	45 C	0742.7	0743.6	2.6				
	33	UPIC	45 C	0742.9	0743.3	3.5				
	113	POTS	45 C	0805.6	0807.1	3.6	100	5		
	33	UPIC	4 S/F	0805.7	0806.8	3.8				
	29	UPIC	4 S/F	0806	0807.2	3.1				
	9100	ARCE	1 S	0853.2	0854	1.4				
	9100	ARCE	22 GRF	0914.1	0930	64				
	536	ONDR	46 C	0931.3		8.5	43	3.6		
	237	TRST		0932	0934.3		365			12L
	237	TRST	42 SER	0932	0932	4.9	605			12L
	237	TRST		0932	0936.8		435			12L
	237	TRST		0932	0936.2		375			10L
	237	TRST		0932	0935.5		240			24L
	202	IZMI	41 F	0932	0932.2	5.2	150			
	33	UPIC	46 C	0932.8	0936.1	8.1				
	29	UPIC	46 C	0934.5	0938.1	5.8				
	228	HARS	7 C	0934.7	0935.5	3.3	390	20		
	3000	BERL	3	0935	0935.8	5	20			
	9500	BERL	4	0935	0935.7	5	5.9			
	3100	CRIM	1 S	0935	0936	5	16	5		
	2695	ATHN	3 S	0935.1	0935.8	5.1	16.4	4.9		
	4995	ATHN	3 S	0935.1	0935.8	5.4	25.2	7.6		
	8800	ATHN	1 S	0935.2	0936.6	4.9	5.9	1.8		
	127	TORN	45 C	0935.2	0936 U	4	150 D			
	1470	BERL	1 S	0935.2	0936.5	5.3	5			
	1420	ARCE	1 S	0935.2	0936.9	7				
	1415	ATHN	1 S	0935.4	0935.7	4.3	4.7	1.4		
	1420	ARCE	20 GRF	0955	1122.3	120				
	33	UPIC	45 C	1002.4	1002.9	1				
	29	UPIC	45 C	1002.5	1002.8	1				
	9100	ARCE	20 GRF	1102.3	1122.8	40				
	2800	OTTA	21 GRF	1107	1315	230	8	4		
	33	UPIC	3 S	1112.5	1112.9	.4				
	29	UPIC	4 S/F	1112.6	1113	.8				
	10500	BERN	22 GRF	1112.8	1122.6	21	4	13		
	9500	BERL	4	1122	1123.9	10	16			
	3000	BERL	1 S	1122	1122.6	2	5.1			
	2695	ATHN	3 S	1122.1	1122.6	2.4	15.9	4.8		
	2800	OTTA	2 S/F	1122.2	1122.6	3	4	1		
	1415	ATHN	1 S	1122.2	1122.6	1.1	9.5	2.8		
	1470	BERL	1 S	1122.2	1122.5	.8	1.8			
	4995	SGMR	3 S	1122.2	1122.6	4.8	23.1	9.2		
	8800	SGMR	3 S	1122.3	1122.6	4.7	20.8	8.3		
	8800	ATHN	3 S	1122.3	1124.1	4.6	12.5	3.8		
	2695	SGMR	1 S	1122.3	1122.6	4.8	5.7	2.3		
	536	ONDR	2 S/F	1122	1122.3	1.5	29			
	10500	BERN	46 C	1202.9	1205.6	121	15	44		
	10500	BERN		1202.9	1244.4		144	332		
	10500	BERN		1202.9	1231.9		229	664		

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	9100	ARCE	28 PRE	1203.1	1224.3	24.6				
	8800	ATHN	47 GB	1203.8	1231.8	104.8	1094	328		
	9500	BERL	4	1203	1231.9	92	965			
	15400	SGMR	47 GB	1204	1232	56	742	297		2,4,CONT,
	15400	SGMR	47 GB	1204	1244		317			SWF
	4995	ATHN	45 C	1204	1231.7	100.1	372	111.6		
	8800	SGMR	47 GB	1204	1245.5		452			SWF
	8800	SGMR	47 GB	1204	1231.7	56	759	304		2,4,CONT,
	4995	ATHN	45 C	1204	1246.5		362			
	4995	ATHN	45 C	1204	1244.3		352			
	9400	HUAN	47 GB	1204.3	1231.7	55.7	859.2	166.2		ROLOR
	4995	SGMR	45 C	1204.4	1231.1	55.6	296	118		2,4,CONT,
	4995	SGMR	45 C	1204.4	1247.7		292			SWF
	2800	OTTA	45 C	1204.5	1246.6	62	114	33		
	2695	SGMR	45 C	1204.7	1246.7		138			SWF
	2695	SGMR	45 C	1204.7	1231.7	55.3	86	55.2		2,4,CONT,
	2695	ATHN	4 S/F	1204.7	1246.7	102.6	126	37.8		
	3000	BERL	4	1204	1246.7	81	117			
	2650	DWIN	10 GB	1205 E	1247	60 D	100	20		
	10715	DWIN	10 GB	1205 E		60 D	220 D			
	1470	BERL	4	1206	1230.3	54	51			
	1420	ARCE	40 F	1206	1230.1	65				
	1415	ATHN	4 S/F	1208.3	1230.3	94.4	60.6	18.2		
	606	SGMR	3 S	1209.5	1216.8	50.5	112	44.8		SWF
	536	ONDR	49 GB	1209	1216.6	80	195	23		
	602	KIEL	45 C	1209	1217	52	250	90		
	234	POTS	45 C	1210.5	1222	80	84000	120		
	410	SGMR	49 GB	1210.9	1212.1	49.1	1350	424		2,4,CONT,
	410	SGMR	49 GB	1210.9	1216		1060			SWF
	405	KIEL	47 GB	1210	1212.5	51	2000	80		
	1420	KIEL	45 C	1210	1230	50	180	130		
	240	KIEL	47 GB	1210	1213	58	3400	100		
	228	HARS	47 GB	1211	1220 U	69	1100 D	110		
	245	SGMR	49 GB	1211	1213	49	4690	4240		2,4,CONT,
	245	SGMR	49 GB	1211	1223		10600			SWF
	408	TRST	45 C	1211.1	1212	1.2	870			
	237	TRST		1211.1	1318		420			38L
	237	TRST	47 GB	1211.1	1222.8	78.5	7550			10L
	260	ONDR	49 GB	1211.5		74	219 D	168		
	113	POTS	45 C	1211.5	1216	152	700	30		
	127	TORN	49 GB	1211.9	1215.5U	76	1100 D	210 D		
	930	BORD	40 F	1211	1233.2	42	46	9		
	408	TRST	49 GB	1212.3	1215.9	22.7	1100			
	1415	SGMR	3 S	1212.4	1230.4	47.6	51	20.4		2,4,CONT,
	808	ONDR	20 GRF	1212	1233.3	39	48	24		
	800	KIEL	45 C	1212	1232	52	140	100		
	33	UPIC	48 C	1221.2	1230.9	21				
	29	UPIC	48 C	1221.2	1226.5	20.8				
	9100	ARCE	4 S/F	1227.7	1232.1	9.7				
	18	MCMA	41 S	1229	1231	5			1	
	930	BORD	8 S	1232	1232	.1	114	1		
	9100	ARCE	30 PBI	1237.4		81				
	4995	BCUL	21 GRF	1242.5	1246.5	27	126	42		
	1420	BCUL	20 GRF	1242.5	1246 U	15	12	4		
	9100	ARCE		1243.5	1244.6	2.6				
	9100	ARCE	45 C	1243.5	1244.6	5.3				
	2695	EOUL	45 C	1244.5E	1248	5 D	88	29		
	9100	ARCE		1246.1	1246.8	2.7				
	9100	ARCE	29 PBI	1248.8		14.7				
	2695	BCUL	29 PBI	1249.5	1249.5	13.5D	42	14		
	9400	HUAN	29 PBI	1300	1300	28.6	28.1	12.2		0
	240	KIEL	47 GB	1300	1310.5	28	240	50		
	485	KIEL	47 GB	1301	1316	25	190	60		
	245	SGMR	7 S	1304.5	1318	29.5	491	196		4,CONT
	418	SGMR	6 S	1304.6	1315.1	28.4	233	93.2		4,CONT
	606	SGMR	20 GRF	1305	1315	26	15.5	6.2		4,CONT
	602	KIEL	45 C	1306	1314	19	100	80		
	800	KIEL	45 C	1306	1314	19	80	75		
	1420	BCUL	1 S	1542	1543.5	5	3	1		
	33	UPIC	45 C	1543.6	1544.2	2.9				
	29	UPIC	45 C	1543.8	1544.5	2.7				
	418	SGMR	6 S	1544	1546.8	3	248	99.2		3G,CONT
	2800	OTTA	1 S	1544	1544.5	2	5.6	2.6		
	2695	BOUL	1 S	1544.5	1545	2	5	2		
	245	SGMR	48 GB	1546.1	1546.2	.2	714	286		3G,CONT
	2800	OTTA	26 FAL	1602	1645	43	-3.2	-1.5		
	2695	BCUL	40 F	1737	1740.5	4	5	2		
	2800	OTTA	1 S	1739	1739.8	2	3.4	1.2		
	2800	OTTA	20 GRF	1815	1855	125	2.6			
	2800	OTTA	20 GRF	2035	2100	65	1.6	0.8		
	9400	HUAN	3 S	2103.3	2103.5	2	23.6	14		0
	9400	HUAN	3 S	2138.6	2138.8	1.1	12.6	9.4		0
	2930	VORO	3 S	2150	2155	10	24			
	2930	VORO	32 ABS	2230	2235	10	-15			
9	221	ABST	44 NS	0700	0722	120	8			

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	245	SGMR	44	NS	0932 E	1556.8	856 D	48.7			CONT
	410	SGMR	44	NS	0932 E	1544	856 D	27.3			CONT
	930	BORO	8	S	1001.5	1001.7	.2	30	2		
	9500	BERL	20		1213	1227	42	7.3			
	930	BORO	40	F	1226	1308.4	68	21	5		
	930	BORO	40	F	1414	1520.5	158	65	5		
	536	ONDR	41	F	1424.3	1429	40	22	6.3		
	808	ONDR	4	S/F	1424.5	1427.5	6	28	16		
	260	ONDR	46	C	1426.5	1440.5	37	93	47		
	2695	ATHN	4	S/F	1429.6	1435.5	28.8	51.7	15.5		
	1415	ATHN	20	GRF	1430	1436.2	27.6	19.8	5.9		
	2800	OTTA	21	GRF	1430	1444	18	2.6	1.3		
	8800	ATHN	4	S/F	1430.1	1435.5	62.2	343	103		
	4995	ATHN	4	S/F	1430.9	1435.5	39.7	164	49.2		
	10500	BERN	45	C	1431.9	1435.2	78	62	179		
	1420	BCUL	20	GRF	1431	1434.5	10	20	7		
	4995	BCUL	46	C	1431	1434	44	110	37		
	3000	BERL	4		1432	1435.2	28	51			
	4995	SGMR	4	S/F	1432	1435.5	29	136	54.4		2,CONT,SWF
	2695	SGMR	4	S/F	1432	1435.5	29	50	20		2,CONT,SWF
	2800	OTTA	3	S	1432	1435.2	10	44.4	15.2		
	9400	HUAN	45	C	1432.4	1435.2	9	245.7	108		L
	2695	BCUL	20	GRF	1432.5	1436	16	44	15		
	1415	SGMR	4	S/F	1432.5	1435.5	56.5	20	8		2,CONT,SWF
	1478	BERL	4		1432.5	1435.4	13	23			
	9100	ARCE	45	C	1432.7	1435.5	7.2				
	9100	ARCE			1432.7	1435.5	3.2				
	1420	ARCE	3	S	1432	1435.3	7.2				
	2650	DWIN	2	S	1432	1435	9	40	20		
	1420	KIEL	45	C	1432	1435	8	140	120		
	8800	SGMR	4	S/F	1433	1436.9	20	176	70.4		2,CONT,SWF
	9500	BERL	4		1433.5	1434.9	47	193			
	10715	DWIN	45	C	1433	1435	8	65			
	800	KIEL	45	C	1433	1437	9	105	85		
	606	SGMR	46	C	1434.8	1440.5	57.2	30	32.5		2,CONT,SWF
	606	SGMR	46	C	1434.8	1523		81.3			2,CONT,SWF
	602	KIEL	45	C	1434	1438.5	14	100	80		
	405	KIEL	47	GB	1434	1446	25	180	70		
	240	KIEL	47	GB	1434	1439.5	37	380	60		
	15400	SGMR	4	S/F	1435	1437.4	18	123	49.2		2,CONT,SWF
	9100	ARCE			1435.9	1437	4				
	410	SGMR	6	S	1436.1	1446.3	67.9	107	42.8		2,CONT,SWF
	410	SGMR	6	S	1436.1	1525		119			2,CONT,SWF
	245	SGMR	6	S	1437	1440.3	67	186	92		2,CONT,SWF
	245	SGMR	6	S	1437	1454.2		230			2,CONT,SWF
	228	HARS		GB	1437.5	1450.7	120	1000 D	33		
	234	POTS	45	C	1437	1440	119	200			
	1420	ARCE	29	PBI	1439.2		18.8				
	237	TRST			1439.4	1525.6		150			0
	237	TRST			1439.4	1450.8		325			62R
	237	TRST	47	GB	1439.4	1439.9	115.8	495			9L
	127	TORN	49	GB	1439.6	1441 U	10 D	640			SUNSET
	9100	ARCE	29	PBI	1439.9		60				
	113	POTS	45	C	1439	1441	101	800			
	9400	HUAN	29	PBI	1441.4	1441.4	41	27.8	19.7		0
	2800	OTTA	45	C	1450	1451.8	8	7.4	3.7		
	2695	BCUL	46	C	1450	1452.6	11.5	8	3		
	2800	OTTA	31	ABS	1458		250	-2.8	-1.4		
	405	KIEL	47	GB	1504	1524.5	46	155	80		
	602	KIEL	45	C	1510	1524.5	30	170	90		
	240	KIEL	45	C	1511	1525.5	53	120	50		
	800	KIEL	45	C	1515	1524.5	20	150	100		
	1420	BCUL	45	C	1522	1523.5	4	8	3		
	1420	KIEL	45	C	1523	1524.5	5	130	115		
	1420	ARCE	4	S/F	1523	1524	5.5				
	2800	OTTA	26	FAL	2042	2112	30	-2.6	-1.3		
10	221	ABST	44	NS	0500	0535.5	240	13			
	200	GORK	43	NS	0521		499		5		
	410	SGMR	44	NS	0931 E	2203.6	858 D	27.4			4,5
	245	SGMR	44	NS	0931 E	2123.3	858 D	21.2			4,5
	221	ABST	45	C	0732	0733	2	41			
	260	ONDR	8	S	1037.2	1037.2	.3	10			
	2800	OTTA	22	GRF	1610	1618	60	2.2	1.1		
	245	SGMR	6	S	1844.9	1845.4	.8	200	60		
	410	SGMR	6	S	1845.2	1845.4	.5	6.1	1.8		
	228	HARS	7	C	1845.7	1846	1.5	57	16		
	410	SGMR	6	S	2155	2203.6	13.2	27.4	11		4
	2800	OTTA	8	S	2155	2155	0.1	5			
	2800	OTTA	21	GRF	2200	2235	140	5	3.2		
	245	SGMR	6	S	2200.8	2201	10.1	9.6	2.8		4
	1415	SGMR	1	S	2201.5	2205.4	6.8	10.9	3.3		4
	606	SGMR	1	S	2202	2206	8.3	2.4	.7		4
	1420	BCUL	2	SF	2202	2204.5	7	9	3		
	2800	OTTA	1	S	2204.5	2205.5	4	3.2	1.6		

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	2695	BCUL	1 S	2205	2206.5	3.5	4	1		
	100	HIRA	46 C	2207	2211	15	900	300		O
	18	MCMA	6 S	2208	2222	15			2	
11	221	ABST	44 NS	0500	0832	240	6			
	3100	CRIM	1 S	0732	0734	6	4	1		
	3000	BERL	1 S	0732	0734	7	4.5			
	1470	BERL	1 S	0733	0735	7	4			
	950	GORK	1 S	0734.7	0736	1.6	1.9			
	228	HARS	49 GB	0735.1	0737.2	42	350	20		
	650	GORK	1 S	0735.2	0736.6	2.2	4	2		
	237	TRST		0735.5	0749.1		50			O
	237	TRST	47 GB	0735.5	0737.4	35.6	440			10L
	237	TRST		0735.5	0805.3		225			13R
	268	ONDR	46 C	0735	0805	35	135	26.8		
	260	ONDR		0735	0736.5		88			
	234	POTS	45 C	0735	0737	55	230	.25		
	200	GORK		0736	0752.2		43			
	200	GORK		0736	0805.2		180			
	200	GORK	46 C	0736	0737 U	33	44			
	202	IZMI	22 GRF	0736	0737.5	3	900	300		
	536	ONDR	42 SER	0742	0817.8	58	7	2.7		
	127	TORN	45 C	0745.5	0752.5	9.5	220	29		
	202	IZMI	23 GRF	0801	0805	7	180	70		
	1420	ARCE	20 GRF	0804.2	0819.2	74				
	3100	CRIM	20 GRF	0809	0829	39	6	2		
	418	SGMR	44 NS	0930 E	1803.3	860 D	4.7			3,5
	245	SGMR	44 NS	0930 E	1750.5	860 D	7			3,5
	9100	ARCE	1 S	0945	0945.4	1				
	930	BORO	8 S	1101.3	1101.3	.2	10	2		
	2800	OTTA	20 GRF	1215	1235	50	2.2	1.4		
	29	UPIC	45 C	1215.6	1215.9	1.3				
	33	UPIC	45 C	1215.9	1216	1.2				
	2800	OTTA	240 R	1335	1400	25	2.2	1.1		
	930	BORO	41 F	1336.7	1337	.4	25	2		
	2800	OTTA	20 GRF	1402	1530	165	2.8	1.4		
	245	SGMR	6 S	2021.1	2022.2	4.4	11	3.3		3
	410	SGMR	6 S	2022.3	2022.9	2.2	21.7	6.5		3
	2695	PENT	21 GRF	2325	2345	135	5	2.5		
	1420	BCUL	1 S	2328.5	2331	5	4	1		
	2695	PENT	3 S	2329.5	2331	4	11.8	5		
	2695	BCUL	4 SF	2330	2332	4.5	13	4		
12	221	ABST	44 NS	0500	0644	240	8			
	3100	CRIM	1 S	1014	1022	13	2	1		
	260	ONDR	3 S	1037.6	1037.6	.3	10			
	260	ONDR	4 S/F	1109	1109	1	45			
	260	ONDR	3 S	1256.6	1256.6	.3	12			
	930	BORO	41 F	1532.6	1532.9	.4	22	2		
	930	BORO	8 S	1644.9	1644.9	.1	12	1		
	2800	OTTA	8 S	1754.4	1754.4	0.2	23.6			
13	8800	ATHN	20 GRF	0734.3	0741.8	59.8	43.1	25.9		
	3100	CRIM	47 GB	0735	0741	32	100	33		
	3100	CRIM	29 PBI	0735	0814	46	4	1		
	3100	CRIM		0735	0807.5	6	5	3		
	2695	ATHN	4 S/F	0735.4	0741.7	59.9	110.9	33.3		
	3000	BERL	4	0737	0741.5	72	95			
	100	GORK	46 C	0738	0747	34	60			
	100	GORK		0738	0753		700			
	4995	ATHN	4 S/F	0738.2	0741.7	60.2	72.4	21.7		
	260	ONDR	46 C	0738.4	0741.6	11	10	2.3		
	5730	IRKU	23 GRF	0738	0746.9	14	50	12		R
	1470	BERL	4	0738	0741.5	48	30			
	1415	MANI	3 S	0739.1	0742	11.6	28.6	19		
	10500	BERN	20 GRF	0739.1	0741.8	37	8	23		
	1415	ATHN	3 S	0739.1	0742.3	53.5	27.2	8.2		
	2695	MANI	3 S	0739.1	0742	10.8	105.1	70		
	9500	BERL	4	0739.5	0741.8	76	24			
	9100	GORK	20 GRF	0739.7	0742.2	61	39	13		
	2950	GORK	4 S/F	0739.8	0741.9	10.2	69	21		
	2650	OWIN	45 C	0739	0741	32	90	20		
	4995	MANI	3 S	0740	0742.4	10.5	46.2	30.8		IG
	650	GORK	1 S	0740.3	0742.5	6.3	3	1.5		
	950	GORK	1 S	0740.5	0742.8	5.3	5.8	2.9		
	33	UPIC	48 C	0743.4	0744.9	13.5				
	29	UPIC	48 C	0743.5	0744.3	13.6				
	268	ONDR	4 S/F	1031	1032.3	1.3	32	12.4		
	9100	ARCE	8 S	1037.1	1037.3	.6				
	410	SGMR	43 NS	1132	1650.7	750 D	4.5			3
	245	SGMR	43 NS	1205	1826.5	707 D	13.7			3
	1420	BCUL	1 S	1657.5	1658	1.5	1	.3		
	4995	BCUL	8 S	1657.5	1658	1	11	4		
	2695	BCUL	2 SF	1658.5	1659	1.5	50	2		
	4995	BCUL	45 C	1732.5	1733.5	3	13	4		

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MAY 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	1420	BCUL	1 S	1733	1734	2	2	1		
	2695	BCUL	2 SF	1734.5	1735.5	2	3	1		
	2695	PENT	240 R	2215	2245	30	2	1.2		
	2695	PENT	27 RF	2345		65	1.2	0.9		
	2695	PENT	24 R	2345	2355	10	1.2	0.6		
	2695	PENT	24P R	2355		45	1.2			
	2695	PENT	26 FAL	2440	2450	10	-1.2	-0.6		
14	260	ONDR	44 NS	0632 E		514 D	11			
	410	SGMR	44 NS	0927 E	2027.8	866 D	13.3			2,3G
	245	SGMR	44 NS	0927 E	1215.2	866 D	24.4			2,3G
	2800	OTTA	14 GRF	1055	1130	160	7	3.5		
	2800	OTTA	1 S	1250	1253.3	7	4	1.6		
	2800	OTTA	21 GRF	1346	1445	194	5	2.2		
	1420	ARCE	23 GRF	1347.8	1330.7	64				
	10500	EERN	20 GRF	1348.6	1407.7	65	5	15		
	9500	BERL	20	1348	1413	37	13			
	9100	ARCE	20 GRF	1349	1408.6	64				
	127	TORN	47 GB	1356	1358.7	3.5	1000	150		
	410	SGMR	6 S	1356.2	1408.5	22.8	48.3	14.5		3G,SWF
	237	TRST	47 GB	1356.5	1407.2	19.5	37			4L
	113	POTS	45 C	1356	1358.5	16	200	20		
	245	SGMR	6 S	1357.2	1405.9	26.8	23.3	7		3G,SWF
	808	ONDR	27 RF	1357	1408.5	19	16	7.2		
	2695	SGMR	20 GRF	1358.6	1407.5	25	31.4	9.4		3G,SWF
	18	MCMA	6 S	1358	1400	4			1	
	2800	OTTA	3 S	1400	1407	20	27.6	8.2		
	1420	ARCE	4 S/F	1400.2	1407.3	13.8				
	9400	HUAN	20 GRF	1400.3	1407.8	16.7	13.2	5.4		O
	1415	SGMR	20 GRF	1400.5	1407.8	18.7	20.3	6.1		3G,SWF
	127	TORN	27 RF	1400.6	1404	11	44	19		
	606	SGMR	20 GRF	1400.7	1408.5	12.5	13.7	4.1		3G,SWF
	1420	BCUL	4 SF	1400 E	1407.5U	10 D	18	6		
	930	BORO	3 S	1400	1408	12	12	6		
	536	ONDR	46 C	1400	1409	13	15	7.6		
	2650	OWIN	45 C	1400	1407	15	20	10		
	8800	SGMR	20 GRF	1401	1405.6	28	12.7	3.8		3G,SWF
	2695	BCUL	20 GRF	1401.5E	1408 U	12.5D	28	9		
	4995	SGMR	20 GRF	1401.5	1407.9	26.4	24.8	7.4		3G,SWF
	3000	BERL	4	1401	1407.5	13	25			
	1470	BERL	4	1401	1407.5	13	21			
	2695	ATHN	3 S	1402	1407.3	13.9	19.7	5.9		
	4995	ATHN	3 S	1402.3	1405.9	16.9	21.2	6.4		
	1415	ATHN	3 S	1403.1	1405.6	8.1	22.1	6.6		
	4995	BCUL	45 C	1403 E	1407	6.5D	17	6		
	8800	ATHN	3 S	1405.3	1405.6	5.4	13	3.9		
	8800	ATHN	4 S/F	1610.3	1613.1	7.4	84.5	25.4		
	4995	BCUL	1 S	1610.5	1611.5	3	13	4		
	2800	OTTA	1 S	1611	1612	2	2.2	1		
	2695	BCUL	1 S	1611	1612.5	3	2	1		
	4995	ATHN	3 S	1611.4	1612.1	3.9	15.9	4.8		
	2695	BCUL	1 S	1658.5	1659	1.5	4	1		
	4995	BCUL	4 SF	1733	1734.5	2	12	4		
	2695	BCUL	2 SF	1734.5	1735.5	2	3	1		
	4995	BCUL	2 SF	1757	1758	1.5	10	3		
	2800	OTTA	1 S	2139	2140	4	1.6	0.8		
15	260	ONDR	44 NS	0647 E		502 D	20			
	127	TORN	44 NS	0720 E	0805.6	120 U	140			V=1
	245	SGMR	44 NS	0926 E	1526.9	868 D	35.7			3,5
	410	SGMR	44 NS	0926 E	1844	868 D	7.2			3,5
	9100	ARCE	1 S	1306.1	1306.3	.8				
	2800	OTTA	22 GRF	1555	1610	95	1.8	0.9		
	2695	BOUL	1 S	1916	1917	2	4	1		
	2800	OTTA	1 S	1916.1	1916.5	1.5	3.4	1.1		
	2800	OTTA	20 GRF	2217	2225	20	2	1		
	2695	PENT	24A R	2315	2325	10	2.6	1.3		
	2695	PENT	1 S	2317	2318.5	2	1.6	0.8		
16	4995	ATHN	3 S	0444.9	0446	5.8	22.4	6.7		
	5730	IRKU	45 C	0445.5	0446.1	5	18	5		L
	5730	IRKU		0445.5	0447		12			L
	8800	ATHN	3 S	0445.7	0446.7	5.4	11.2	6.7		
	260	ONDR	44 NS	0550 E		558 D	27	3		
	127	TORN	44 NS	0720 E	1430 U	450 D				V=0
	100	GORK	43 NS	0742		240		5		
	245	SGMR	43 NS	1130	1344.4	745 D	40.8			2,3,5,SWF
	410	SGMR	43 NS	1500	1614.2	535 D	11.2			2,3,5,SWF
	113	POTS	45 C	0658.7	0659.9	1.4	350	50		
	202	IZMI	41 F	0703	0705.3	5	100			
	113	POTS	1 S	0839	0839.1	.2	350	100		
	33	UPIC	4 S/F	0926.5		1.1				
	29	UPIC	4 S/F	0926.6	0927.3	1				
	29	UPIC	8 S	0930.8	0931	.5				
	33	UPIC	8 S	0930.8		.6				

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MAY 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	33	UPIC	8 S	0954.6		.7				
	29	UPIC	4 S/F	0954.7	0955.2	1				
	29	UPIC	8 S	0956.2	0956.4	.6				
	33	UPIC	8 S	0956.2		.5				
	9100	ARCE	3 S	1008.5	1008.6	.8				
	2800	OTTA	1 S	1519	1519.5	1	1.4	0.7		
	2800	OTTA	21 GRF	1600	1635	170	8.2	4.1		
	930	BORD	40 F	1603	1612.3	21	25	4		
	1420	BOUL	20 GRF	1604.5	1612	17 D	22	7		
	2695	ATHN	3 S	1609.8	1617.7	8.6	23.2	7		
	2695	BCUL	4 SF	1610 E	1613.5	4.5D	26	9		
	4995	BCUL	46 C	1610.5	1613.5	4.5	14	5		
	2800	OTTA	45 C	1611.5	1612.4	8	20	64		
	1415	ATHN	3 S	1611.5	1612.8	8.7	22.1	6.6		
	8800	ATHN	3 S	1611.6	1612.8	3.9	17.3	5.2		
	9400	HUAN	4 S/F	1611.7	1612.5	3	11.8	5.6		R
	18	MCMA	42 SER	1611	1635	41			2	
	4995	ATHN	3 S	1612	1612.5	6.2	23	6.9		
	930	BORD	41 F	1630	1634.8	7	25	4		
	2800	OTTA	1 S	1730	1731	6	1.2	0.6		
	2800	OTTA	20 GRF	1757	1801	25	5.6	1.9		
	2800	OTTA	1 S	1855.2	1856.5	5	1.6	0.8		
	2800	OTTA	8 S	1928.5	1928.8	0.5	1.6	0.8		
	245	SGMR	6 S	1929.8	1930	1	34.8	13.9		5
	2800	OTTA	24 R	2110	2145	35	2.6	1.3		
	2800	OTTA	27A RF	2110		230	2.6	2.2		
	2800	OTTA	24P R	2145		170	2.6			
	1420	BCUL	46 C	2154.5	2156.5	7	5	2		
	100	HIRA	7 C	2156.8	2157.2	2	11000	5000		ML
	1415	SGMR	1 S	2156.9	2157.5	2.6	3.9	1.6		5
	245	SGMR	48 GB	2156.9	2157.1	1.5	970	388		5
	410	SGMR	6 S	2156.9	2157.1	1.5	18.6	7.4		5
	2800	OTTA	8 S	2156.9	2157.2	0.4	7.8	3.9		
	18	MCMA	6 S	2156	2158	3			1	
	200	HIRA	7 C	2157	2157.5	1	1000	300		WR
	4995	BCUL	8 S	2256	2257	2	13	4		
	2800	OTTA	26 FAL	2435	2500	25	-2.6	-1.3		
17	200	GORK	43 NS	0400 E		320		5		
	100	GORK	43 NS	0451		107		5		
	260	ONDR	44 NS	0543 E		568 D	20	4		
	127	TORN	44 NS	0650 E	1100 U	480 D				V=1
	245	SGMR	44 NS	0924 E	0944.7	872 D	49.7			5,SWF
	410	SGMR	44 NS	0924 E	2036.4	872 D	18			5,SWF
	536	ONDR	27 GRF	0917.7	0926.2	28	32	14		
	930	BORD	8 S	0917.7	0917.8	.2	25	2		
	2800	OTTA	22 GRF	1438	1510	80	5.8	2.9		
	228	HARS	45 C	1501.7	1502.5	4	98	30		
	245	SGMR	6 S	1502.2	1503.9	16.8	113	33.9		3G,SWF
	237	TRST	41 F	1502.3	1503.7	2.5	134			D
	113	POTS	45 C	1502.5	1503.1	2.5	100	5		
	410	SGMR	6 S	1512	1515.8	7	38.4	11.5		3G,SWF
	2800	OTTA	20 GRF	2025	2125	230	3.6	1.6		
18	100	GORK	46 C	0516.3	0518.7	21	1300			
	100	GORK		0516.3	0522.6		3730			
	29	UPIC	46 C	0519.2	0521	5.4				
	33	UPIC	46 C	0520.1		4.1				
	260	ONDR	44 NS	0535 E		573 D	40	6		
	200	GORK	43 NS	0615		405		5		
	100	GORK	43 NS	0624		396		40		
	127	TORN	44 NS	0650 E		480 D				V=1
	245	SGMR	44 NS	0923 E	1156	874 D	26			3G,CONT
	410	SGMR	44 NS	0923 E	1811.9	874 D	7.8			3G,CONT
	221	ABST	41 F	0614.8	0615.2	1	10			
	536	ONDR	41 F	0617	0624	8	18			
	200	GORK		0620	0633 U		37			
	200	GORK	45 C	0620	0625 U		40			
	202	IZMI	23 GRF	0623.7	0633	11.3	130	40		
	650	GORK	1 S	0630.4	0633	4.6	11	5		
	950	GORK	1 S	0630.5	0633.1	3.3	9.8	4.9		
	808	ONDR	3 S	0630	0633.2	6	15	9		
	536	ONDR	2 S/F	0630	0632.4	6	7	3.7		
	2800	OTTA	21 GRF	1100	1130	150	5	2.5		
	1420	ARCE	20 GRF	1107.7	1110.5	54				
	808	ONDR	2 S/F	1126.6	1126.6	.6	32	4.5		
	2800	OTTA	1 S	1158.5	1158.8	1.2	2.6	1.3		
	2800	OTTA	21 GRF	1750	1803	240	3	2.6		
	1415	SGMR	3 S	1750.2	1752	7.3	273	109		
	1420	BCUL	4 SF	1750	1752.5	8	43	14		
	930	BORD	46 C	1750	1752.8	7	103	8		
	2695	BOUL	16 C	1751	1754	5	24	8		
	2695	SGMR	S	1751	1753.3	7	3 33.3	13.3		
	237	TRST	41 F	1751.2	1751.8	3.3	275			14L
	245	SGMR	6 S	1751.4	1752	8.6	218	87.2		

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	606	SGMR	3 S	1751.5	1752.6	4.6	72.6	29		
	228	HARS	45 C	1751.5	1752.5	3.5	95	25		
	2800	OTTA	40 F	1751.5	1753.2	3	25			
	410	SGMR	6 S	1751.9	1754.5	8.1	57.4	23		
19	260	ONDR	44 NS	0512 E		597 D	16			
	410	SGMR	44 NS	0922 E	1652.9	876 D	25.2			5
	245	SGMR	44 NS	1230 E	2023.8	688 D	39.6			5
	208	VORO	44 NS	2100 E		240 D		10		
	536	ONDR	45 C	0814	0814.7	3	7	4.7		
	808	ONDR	4 S/F	0814	0815	3.5	21	9.3		
	930	BORD	41 F	0814	0814.8	3	18	2		
	33	UPIC	46 C	1114.4	1118.7	11.8				
	29	UPIC	46 C	1114.7	1118.6	11.1				
	127	TORN	46 C	1114.8	1119.6	10.5	56	5.8		
	8800	ATHN	3 S	1243.6	1245.1	5.4	10.8	6.5		
	930	BORD	41 F	1502.2	1502.3	.3	54	2		
	2800	OTTA	20 GRF	1510	1550	80	1.8	1.4		
	2800	OTTA	20 GRF	1845	1940	70	1.8	1.4		
	2800	OTTA	20 GRF	2107	2125	85	3	2		
	2695	PENT	20 GRF	2300	2330	100	5.2	2.6		
20	200	GORK	44 NS	0315		278		10		
	260	ONDR	44 NS	0540 E		577 D	47	9		
	127	TORN	44 NS	0730 E	0846	410 D	60			V=1
	245	SGMR	44 NS	0921 E	1802.8	878 D	105.3			3
	410	SGMR	44 NS	0921 E	2132.6	878 D	61.1			3
	208	VORO	44 NS	2100 E	2134	240 D	18	8		
	536	ONDR	45 C	0910	0911	1	104			
	3100	CRIM	25 R	1020	1100		3			
	536	ONDR	8 S	1040.5	1040.5	.2	98			
	3100	CRIM	1 S	1056	1057	2	2	1		
	9100	ARCE	21 GRF	1145.3	1151.8	35				
	9100	ARCE	40 F	1145.7	1146.8	1.7				
	9100	ARCE	40 F	1155.1	1156.5	2.2				
	9100	ARCE	1 S	1224.2	1224.5	.9				
	237	TRST	47 GB	1302.4	1302.9	2.1	90			0
	2800	OTTA	1 S	1328	1330	8	1	0.5		
	2695	BOUL	1 S	1406	1407.5	3	3	1		
	1420	BOUL	1 S	1410.5	1411	1.5	2	1		
	1420	ARCE	1 S	1411	1411.4	1.7				
	2800	OTTA	21 GRF	1610	1655	100	2.6	1.3		
	2800	OTTA	1 S	1628.5	1630	2	1	0.5		
	2695	BOUL	45 C	1629	1630.5	5.5	2	1		
	1420	BOUL	1 S	1629	1630	2.5	2	1		
	2800	OTTA	45 C	1818.5	1820	2	2.6	1.3		
	2695	BOUL	40 F	1819.5	1821	3	1	0.3		
	2800	OTTA	20 GRF	1830	1845	150	2.6	1.3		
	2800	OTTA	240 R	2118	2125	7	2.6			
	500	HIRA	27 RF	2121.2	2214	120	30	15		ML
	500	HIRA		2121.2	2132		25			SL
	200	HIRA	27 RF	2125	2215	140	30	15		ML
21	2695	BOUL	46 C	0048.5	0050.5	5.5	5	2		
	15000	KISV	45 C	0537	0539	3	145			
	10500	BERN	45 C	0537.6	0538.3	7	19	55		
	5730	IRKU	2 S	0537.7	0538.3	8	63	21		L
	2950	GORK	3 S	0537.8	0538.5	3.1	14.4	7		
	9100	GORK	4 S/F	0537.8	0538.2	6.2	82	27		
	2695	ATHN	4 S/F	0538.1	0538.6	10.7	76.2	22.8		
	8800	ATHN	4 S/F	0538.2	0538.5	12.6	72.8	21.9		
	4995	ATHN	4 S/F	0538.2	0538.5	12.5	115	34.5		
	1415	ATHN	3 S	0538.3	0538.6	10.3	16.4	9.8		
	2695	MANI	4 S/F	0547.6	0548.5	6.2	82.9	55.3		
	1415	MANI	3 S	0547.7	0548.8	4.5	12.3	8.2		
	4995	MANI	4 S/F	0548	0549.2	6.8	59.7	39.8		
	8800	MANI	4 S/F	0548	0548.3	4	58.2	38.8		
	260	ONDR	44 NS	0720 E		471 D	27	4		
	245	SGMR	44 NS	0920 E	1608.8	880 D	278			3,5
	410	SGMR	44 NS	0920 E	1544	880 D	32.3			3,5
	113	POTS	1 S	0722.3	0722.4	.2	200	70		
	237	TRST	41 F	1526.7	1526.7	.2	115			7L
	2800	OTTA	1 S	1701	1703.5	5	1.4	0.7		
	1420	BOUL	40 F	1701	1702.5	2.5	4	1		
	1420	BOUL	1 S	1712	1713	2.5	3	1		
	2800	OTTA	22 GRF	2045	2103	100	3.2	2		
	2695	PENT	22 GRF	2223	2255	70	1.4	0.7		
	2695	PENT	2 S/F	2349.2	2349.9	7	4.2	2.1		
22	2695	BOUL	28 PRE	0026	0037 U	39.5	19	6		
	2695	BOUL	21 GRF	0105.5E	0107.5	16.50	30	10		
	100	HIRA	46 C	0204	0204.5	2.5	3000	1000		0
	2695	MANI	3 S	0204.3	0205	2.7	11.6	7.7		
	4995	MANI	3 S	0204.4	0205.3	1.5	17.2	11.4		IG
	1415	MANI	2 S/F	0204.5	0205	1.5	5.9	3.9		

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	100	HIRA	7	C	0308	0308.3	1	7000	600		O
	200	HIRA	7	C	0308	0308.3	1	1500	500		O
	6100	KISV	4	S/F	0417	0424.3	8	16			
	6100	KISV	45	C	0440	0504	65	23			
	260	ONDR	44	NS	0522 E		586 D	34	2		
	245	SGMR	44	NS	0919 E	1847.4	882 D	95.4			3,5
	410	SGMR	44	NS	0919 E	1021	882 D	14.9			3,5
	6100	KISV	4	S/F	0711	0714	5	11			
	202	IZMI	5	S	0730	0730	.3	110	60		
	113	POTS	45	C	0730	0730.1	.2	100	25		
	9100	GORK	1	S	0845.8	0846	.6	7.9	3.5		
	3100	CRIM	1	S	1007	1013	7	4	1		
	33	UPIC	42	SER	1039.3	1039.8	10.1				
	29	UPIC	42	SER	1039.5	1040	9.9				
	237	TRST	41	F	1046.2	1046.2	.6	145			4R
	9100	ARCE	8	S	1350.2	1350.3	.8				
	9100	ARCE	1	S	1352.1	1352.5	.9				
	9500	BERL	3		1422	1422.5	2	13			
	234	POTS	48		1431.5	1431.6	2.7	500	2		
	2695	BOUL	4	SF	1431.5	1434.5	5	13	4		
	237	TRST	42	SER	1431.8	1431.8	2.9	840			5L
	237	TRST			1431.8	1434		490			5L
	1420	BOUL	2	SF	1431	1433.5	4	4	1		
	113	POTS	48		1432.4	1434.5	8.6	600	2		
	1420	ARCE	2	S/F	1432	1433.9	5.8				
	2800	OTTA	2	S/F	1433	1434	3	7.4	2.6		
	1470	BERL	4		1433.5	1434	5	6			
	3000	BERL	2		1433.5	1434	1.5	6.2			
	18	MCMA	6	S	1433	1434	4			1	
	2800	OTTA	23	GRF	1500	1727	235	5.2	2.3		
	2695	BOUL	1	S	1500.5	1502	2.5	4	1		
	1420	ARCE	4	S/F	1623.9	1624.4	4				
	4995	BOUL	8	S	1623	1624	2	19	6		
	1420	BOUL	8	S	1623	1624	1.5	20	7		
	2800	OTTA	4	S/F	1624	1624.5	3	25	8		
	10500	BERN	32	ABS	1624.2	1624.6	2	5	14		
	33	UPIC	4	S/F	1624.3	1624.7	4.2				
	237	TRST	47	GB	1624.4	1624.7	1.1	1250			15L
	9100	ARCE	1	S	1624.5	1624.6	5.5				
	29	UPIC	4	S/F	1624.5	1625.2	4				
	2695	BOUL	4	SF	1624.5	1625	2	28	9		
	18	MCMA	6	S	1624	1628	7			1	
	2650	DWIN	45	C	1624	1624	3	20	5		
	18	MCMA	6	S	1835	1841	7			2	
	930	BORD	46	C	1836.8	1837.7	5.2	47	7		
	1420	BOUL	45	C	1836	1837	5	15	5		
	2800	OTTA	45	C	1837	1838	4.5	11	3.8		
	2695	BOUL	46	C	1837	1838	4.5	11	4		
	2695	PENT	21	GRF	2240	2517	180 D	17.4			
	2695	PENT	20	GRF	2414	2425	40	14.8	6.3		
	2695	PENT	4	S/F	2504.5	2507	10	34	11		
23	2695	MANI	3	S	0018.4	0022.5	13.6	15.8	10.2		
	1415	MANI	3	S	0019.5	0025	12.5	7.9	5.3		
	4995	MANI	3	S	0020	0025	12.1	40.8	27.2		
	2695	MANI	3	S	0104.6	0106.8	4.7	39.5	26.3		
	1415	MANI	3	S	0104.8	0106.8	5.7	36	23.9		
	4995	MANI	3	S	0104.8	0106.8	3.2	29.7	19.8		
	2930	VORO	3	S	0104	0107	6	44			
	1420	BOUL	3	S	0104	0106	5	22	7		
	1400	SYDN	3	S	0105	0106.7	5				
	6100	KISV	22	GRF	0635	0638	5	5			
	6100	KISV	22	GRF	0718	0719	20	2			
	9100	ARCE	1	S	0912	0912.4	.8				
	9100	ARCE	1	S	0913.6	0913.8	1				
	3100	CRIM	24	R	0922	1300		4			
	260	ONDR	42	SER	1108	1129.5	65	192			
	29	UPIC	41	F	1117.9	1140.1	29.6				
	33	UPIC	41	F	1120.2	1131.3	30.5				
	245	SGMR	43	NS	1120.4	1142.5	761.6D	43			
	410	SGMR	43	NS	1129.8	1517.2	752 D	9.2			
	2800	OTTA	21	GRF	1445	1710	230	3.2	1.6		
	2800	OTTA	1	S	1610	1613	8	7.8	1.9		
	4995	BOUL	2	SF	1611	1612.5	3.5	10	3		
	2695	BOUL	1	S	1612	1613.5	3	7	2		
	930	BORD	8	S	1635.4	1635.4	.3	103	2		
	930	BORD	41	F	1701.4	1701.8	1.6	38	2		
	2800	OTTA	240	R	1948	1952	4	2	1		
	4995	BOUL	20	GRF	1949.5	1955 U	20.5D	12	4		
	2800	OTTA	1	S	1953	1954.5	7	3	1.4		
	2695	BOUL	20	GRF	1953.5	1955.5	11.5	5	2		
	2800	OTTA	8	S	2038	2038.3	0.5	5.2	2.6		
	2800	OTTA	20	GRF	2100		120	2	1.4		
24	260	ONDR	46	C	0547.6	0554	7.5	29	7.6		

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	808	ONDR	2 S/F	0548.3	0552.3	7	12	5.3		
	536	ONDR	45 C	0549	0551	5.5	20	3.6		
	650	GORK		0550.8	0552.8		20			
	650	GORK	45 C	0550.8	0551.4	4.2	17.5			
	950	GORK	1 S	0551.2	0552.8	2.4	5.5	2.7		
	5730	IRKU	1 S	0621	0622	2	9			R
	260	ONDR	4 S/F	0700	0701.7	3	19	1.4		
	113	POTS	45 C	0706.5	0706.6	.3	125	25		
	260	ONDR	41 F	0810.2	0810.2	14	8			
	260	ONDR	46 C	0906.3	0906.3	9.5	15	1.3		
	606	MANI	3 S	0911.4	0916.1	6.3	15.8	10.6		
	930	BORD	41 F	1007.5	1007.7	.5	16	2		
	408	TRST	42 SER	1050.1	1056.3	6.5	97			
	536	ONDR	8 S	1050.8	1050.8	.3	48			
	9100	ARCE	46 C/F	1108.1	1109.4	2.3				
	1420	ARCE	1 S	1135.8	1140	.4				
	245	SGMR	43 NS	1200	1228	723 D	83.3			3G,SHF
	410	SGMR	43 NS	1200	1228.1	723 D	18.4			3G,SHF
	228	HARS	45 C	1227.5	1227.7	2	55	20		
	260	ONDR	4 S/F	1227.6	1228.6	4	25	4.6		
	237	TRST	41 F	1227.9	1228	1.2	135			25L
	930	BORD	41 F	1246.2	1246.6	.4	16	2		
	2800	OTTA	1 S	1250	1251.5	3	2.4	1.2		
	2800	OTTA	23 GRF	1350	1450	200	6.8	3.5		
	260	ONDR	8 S	1432.6	1432.6	.5	20	1		
	237	TRST	41 F	1551.4	1551.5	.2	297			11L
	237	TRST	41 F	1555.3	1555.4	.2	58			14L
	2800	OTTA	1 S	1602	1603.5	6	2.6	1.7		
	237	TRST	5 S	1605.9	1605.9	.1	435	145		14L
	237	TRST	41 F	1621.8	1622.8	1.2	150			15L
	2800	OTTA	21 GRF	1750	1950	275	18	9		
	2695	BOUL	4 SF	1750.5	1755.5	11.5	21	7		
	4995	BOUL	4 SF	1751.5	1753.5	6	19	6		
	2800	OTTA	4 S/F	1752	1754.1	6	12.2	4		
	1420	BOUL	46 C	1752	1754	4.5	7	2		
	237	TRST	41 F	1753.5	1753.7	.5	87			0
	18	MCMA	6 S	1753	1756	11			2	
	4995	BOUL	3 S	1904.5	1910.5	11.5	58	19		
	1420	BOUL	4 SF	1905	1911	8	13	4		
	2695	BOUL	20 GRF	1906	1912.5	19	50	17		
	2800	OTTA	3 S	1906	1911	14	52.8	26.4		
	4995	SGMR	3 S	1906.5	1911.5	19.5	60.6	24.2		
	2695	SGMR	3 S	1906.6	1910.5	19.4	59.2	23.7		
	8800	SGMR	3 S	1907	1911	18	41	16.4		
	15400	SGMR	20 GRF	1907.5	1909.5	16.5	7.4	3		
	1415	SGMR	20 GRF	1908	1912	17	14	5.6		
	1420	BOUL	29 PBI	1912.5	1912.5	17.5D	9	3		
	4995	BOUL	29 PBI	1916	1916	74.5	25	8		
	9400	HUAN	29 PBI	1918 E	1918 U	13.1	30.8	27.3		R
	2800	OTTA	29 PBI	1920	1920	30	16.4	8.2		
	9400	HUAN	3 S	2102.3	2102.8	2	40.5	13		R
	4995	BOUL	1 S	2242	2243	2.5	3	1		
	2800	OTTA	1 S	2243	2243.5	2	3	1.8		
	2695	BOUL	2 SF	2243.5	2244.5	3	3	1		
25	6100	KISV	4 S/F	0446	0446.3	2	5			
	6100	KISV	21 GRF	0537	0542	8	5			
	6100	KISV	21 GRF	0557	0603	11	6			
	260	ONDR	46 C	0602	0602.7	11	21	3.3		
	536	ONDR	41 F	0605.8	0616.2	17	9			
	6100	KISV	45 C	0610	0613	19	13			
	930	BORD	41 F	0614.4	0616.3	2.2	31	4		
	1415	MANI	2 S/F	0614.5	0615.3	2.5	17.3	11.5		
	808	ONDR	45 C	0615	0616.2	2	29	5		
	6100	KISV	20 GRF	0712	0712.3	8	3			
	260	ONDR	8 S	0723	0723	.2	10			
	6100	KISV	4 S/F	0804.3	0807	21	3			
	3100	CRIM		0828	0913		6	2		
	3100	CRIM		0828	0851		3	1		
	3100	CRIM	2 S/F	0828	0841	60	6	2		
	6100	KISV	4 S/F	0902	0904.3	7	4			
	6100	KISV	1 S	1017	1019	3	4			
	536	ONDR	8 S	1458	1458	.3	136			
	9400	HUAN	8 S	1637.6	1638	.8	16.1	6.8		0
	2800	OTTA	21 GRF	1705	1729	180	10.4	3.2		
	9400	HUAN	21 GRF	1718.4	1729.4	38.4	12.9	4.8		0
	2695	BOUL	28 PRE	1719	1741.5U	335	16	5		
	2800	OTTA	20 GRF	1736	1740	12	4.4	2.2		
	1415	SGMR	3 S	1751.3	1751.6	.9	31.2	12.5		3,5
	1420	BOUL	8 S	1751.5	1752	1	17	6		
	4995	BOUL	4 SF	1751	1751.5	4	30	10		
	2800	OTTA	3 S	1752	1752.5	3	39.6	9		
	29	UPIC	4 S/F	1752.1	1752.8	2.8				
	33	UPIC	4 S/F	1752.2	1752.5	2.6				
	2695	SGMR	3 S	1752.2	1752.7	2.8	41.8	16.7		3,5

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	4995	SGMR	3 S	1752.2	1752.6	2.8	34.7	13.9		3,5
	9400	HUAN	1 S	1752.3	1752.5	1.6	8.1	5.4		R
	2695	BCUL	3 S	1752.5E	1753.5	17 D	31	10		
	2650	OWIN	2 S	1752	1753	2	30	10		
	18	MCMA	6 S	1930	1933	4			1	
	4995	BCUL	4 SF	2250.5	2251.5	2	23	8		
	2800	OTTA	3 S	2251.8	2252.7	4	10	3.3		
	1420	BCUL	1 S	2251	2252	5	10	3		
	2695	BCUL	1 S	2252	2253.5	3	8	3		
	1415	MANI	3 S	2252	2252.7	2	12.8	8.5		
	4995	MANI	3 S	2252	2252.7	1.8	10.3	6.9		
	2695	MANI	3 S	2252	2252.6	1.7	11.8	7.9		
	245	SGMR	7 S	2252.7	2253.7	1.8	496	198		
	1400	SYDN	3 S	2352	2352.6	2.5				
26	2695	PENT	20 GRF	0030	0048	70 D	15.6			
	1420	BOUL	3 S	0043.5	0048	10	10	3		
	1415	MANI	3 S	0044.8	0048.2	6.2	14	9.4		
	1400	SYDN	3 S	0045	0048	5				
	2695	MANI	3 S	0045.1	0048	5.4	11.8	7.9		
	6100	KISV	45 C	0512.3	0515.3	6	7			
	260	ONDR	44 NS	0540 E		571 D	21			
	127	TORN	44 NS	0720 E	0913.6	450 D	90			V=0
	280	GORK	43 NS	0906		234		5		
	245	SGMR	44 NS	0916 E	2022.8	888 D	232			3G,CONT
	650	GORK		0553.3	0609.7		52			
	650	GORK	46 C	0553.3	0554	25.7	18.5			
	536	ONDR	2 S/F	0605	0606.2	4	9	2.4		
	888	ONDR	41 F	0605	0610	20	46	12		
	606	MANI	4 S/F	0843.9	0844.4	3.8	32.6	21.8		
	1415	MANI	2 S/F	0844.2	0844.4	3.3	4.1	2.7		
	9580	BERL	20	0855	0906.5	92	6.5			
	3000	BERL	20	0905	0920	50	6.1			
	1470	BERL	20	0908	0914	72	2.6			
	202	IZMI	22 GRF	0933	0935	3.2	1500	500		
	202	IZMI	23 GRF	0936.8	0938.6	1.8	1400	450		
	9100	ARCE	4 S/F	0951.7	0952.2	1.8				RECORDDISTURBED
	930	BORD	41 F	1007	1007.6	.7	24	2		
	930	BORD	41 F	1100	1102.8	3.5	22	3		
	2800	OTTA	26A FAL	1105	1535	270	-12			
	2800	OTTA	21 GRF	1150	1205	125	6	3.6		
	2800	OTTA	2 S/F	1334	1336.2	5.2	5.8	2		
	930	BORD	8 S	1514	1514	.1	15	1		
	930	BORD	41 F	1537.9	1538.2	.5	26	2		
	220	HARS	46 C	1614	1616	3.5	29	9		
	1420	BOUL	41 F	1646	1648.5	12.5	24	8		
	2800	OTTA	22 GRF	1744	1748	25	3	1.5		
	2800	OTTA	21 GRF	1745	1822	185	5.6			
	2695	BCUL	41 F	1746.5	1754	26.5	47	16		
	2800	OTTA	45 C	1746.5	1750.2	13	80	14.6		
	2695	SGMR	45 C	1746.7	1754.5		77.8			3G,CONT,SWF
	4995	SGMR	45 C	1746.7	1754.5		73.3			3G,CONT,SWF
	4995	SGMR	45 C	1746.7	1750	25.9	109.2	43.7		3G,CONT,SWF
	2695	SGMR	45 C	1746.7	1750.2	23.8	91.5	36.6		3G,CONT,SWF
	8800	SGMR	45 C	1747.2	1749.9	24	140.4	56.2		3G,CONT,SWF
	8800	SGMR	45 C	1747.2	1754.5		85.4			3G,CONT,SWF
	9400	HUAN		1747.3	1754.7		99.1			
	9400	HUAN	45 C	1747.3	1750	10.2	151.3	42.6		R
	4995	BOUL	41 F	1747.5	1750.5	11.5	192	64		
	1415	SGMR	45 C	1747.6	1750.4	13.6	29.5	16		3G,CONT,SWF
	1415	SGMR	45 C	1747.6	1754.8		40			3G,CONT,SWF
	15400	SGMR	3 S	1747.7	1750.1	31.1	205	82		3G,CONT,SWF
	35000	SGMR	20 GRF	1747.7	1750.1	12.3	9.5	3.8		3G,CONT,SWF
	930	BORD	46 C	1747	1755.6	12	43	4		
	10500	BERN	41 F	1748.9	1750	20 D	44	126		
	10500	BERN		1748.9	1754.7		20	58		
	245	SGMR	7 S	1751	1755	8	394	118		3G,CONT,SWF
	410	SGMR	6 S	1752	1755.2	7	139	55.5		3G,CONT,SWF
	606	SGMR	3 S	1754.3	1755.3	3.9	43.6	17.6		3G,CONT,SWF
	18	MCMA	6 S	1754	1757	4			1	
	9400	HUAN	29 PBI	1757.5	1757.5	12.2	15.6	10.1		O
	2695	BCUL	28 PRE	2337.5	2342.5	5	3	1		
	2695	BCUL	1 S	2342.5	2344.5	4.5	9	3		
	606	MANI	2 S/F	2343.3	2344.9	2.7	5.9	3.9		
	2800	OTTA	1 S	2344	2345.3	4	4.4	2		
	4995	BOUL	4 SF	2344.5	2346	5	12	3		
	1415	MANI	2 S/F	2344.6	2345.2	1.5	6.9	4.6		
	2695	MANI	2 S/F	2344.6	2345.3	1.4	6.5	4.3		
27	200	GORK	44 NS	0300		420		5		
	260	ONDR	44 NS	0555 E		577 D	27			
	127	TORN	43 NS	0905 U	0935.6	345 D	160			V=1
	245	SGMR	44 NS	0916 E	1210.8	889 D	29			
	410	SGMR	44 NS	0916 E	1209.5	889 D	83.3			
	6100	KISV	28 PRE	0541	0552	13	36			

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	15000	KISV	4 S/F	0550	0552.1	5	15			
	3100	CRIM	3 S	0550	0552	6	15	5		
	10500	BERN	22 GRF	0550.6	0551.7	7.5	9	26		
	4995	ATHN	3 S	0550.9	0552.3	10.3	45.4	27.3		
	9100	GORK	4 SF	0551	0551.7	4.6	42	14		
	2695	ATHN	3 S	0551.2	0552.3	9.9	17.3	10.4		
	8800	ATHN	3 S	0551.3	0552.2	9.7	39.2	23.5		
	650	GORK	4 SF	0551.6	0551.6	1.3	69			
	5730	IRKU	1 S	0551	0552	6	33	12		R
	100	CORK	46 C	0630	0631 U	6.2	80			
	100	HIRA	46 C	0630	0631	3	850	300		SL
	200	HIRA	46 C	0630	0632	3	60	25		ML
	100	GORK		0630	0632.1		2910			
	3100	CRIM	1 S	0735	0737	4	4	1		
	6100	KISV	2 S/F	0735	0737.3	5	3			
	6100	KISV	2 S/F	0800	0812	27	23			
	3100	CRIM	1 S	0810	0811.5	3	4	1		
	9500	BERL	1 S	0811	0811.6	19	10			
	9100	GORK	1 S	0811.4	0811.8	1.8	15	6.5		
	9100	ARCE	1 S	0811.5	0812	6				
	9100	ARCE	21 GRF	0811.5		113				
	930	BORD	8 S	0811.7	0811.7	.2	18	1		
	4995	ATHN	3 S	0811.9	0812.1	5.2	11.4	6.8		
	8800	ATHN	3 S	0811.9	0812.2	4.5	13.1	7.8		
	930	BORD	8 S	0815.2	0815.2	.1	32	1		
	33	UPIC	42 SER	0922.3	0922.6	14.3				
	29	UPIC	42 SER	0922.5	0923	14.1				
	6100	KISV	1 S	0924	0924.3	1	3			
	6100	KISV	28 PRE	0938.3	1008	37	20			
	3100	CRIM	1 S	0939	0940	4	7	2		
	29	UPIC	45 C	1000.8	1001.9	2.3				
	33	UPIC	45 C	1000	1001.8	3.1				
	10500	BERN	20 GRF	1005.4	1007	6	5	13		
	3100	CRIM	1 S	1006.5	1008	4	7	2		
	3000	BERL	20	1006	1008.5	7	7.9			
	9500	BERL	20	1006	1007.5	24	9.1			
	6100	KISV	1 S	1145	1145.3	1	5			
	10500	BERN	40 F	1148.3	1148.9	3	4	11		
	1470	BERL	4	1208.5	1209.6	6.5	6.1			
	29	UPIC	42 SER	1208.5	1209.8	22.3				
	33	UPIC	42 SER	1208.5	1209.4	22.3				
	113	POTS	2	1208.7	1211.8	4.5	200	5		
	1420	ARCE	2 S/F	1208.9	1209.8	2.6				
	2800	OTTA	1 S	1209	1210	4	2.4	1.2		
	3000	BERL	1 S	1209	1209.5	3	4			
	930	BORD	41 F	1209	1210	2	20	3		
	408	TRST	40 F	1217.7	1219.3	3.1	150			
	6100	KISV	29 PBI	1229.3	1230	5	3			
	1420	ARCE	1 S	1229.6	1229.9	1				
	2800	OTTA	1 S	1229.9	1230	2.5	7.6	1.9		
	29	UPIC	42 SER	1308.4	1309.4	5.2				
	33	UPIC	42 SER	1308.4	1309.1	5.1				
	9100	ARCE	4 S/F	1352.5	1352.8	2				
	9100	ARCE	1 S	1355.4	1355.6	.6				
	2800	OTTA	22 GRF	1550	1625	90	3	1.5		
	18	MCMA	6 S	1710	1713	5			1	
	2800	OTTA	22 GRF	2038	2045	12	1.2	0.6		
	2695	PENT	240 R	2125	2305	100	3.8	2.2		
	2695	PENT	1 S	2314	2317	10	1.6	1		
28	2695	PENT	20 GRF	0056	0105	35	7	3.5		
	221	ABST	6 S	0629	0629.5	1	20			
	6100	KISV	8 S	0635	0637	3	7			
	221	ABST	41 F	0651.2	0651.5	1	11			
	6100	KISV	21 GRF	0713	0731	57	16			
	3000	BERL	4	0713.5	0716.8	6.5	61			
	2950	GORK	4 S/F	0713.5	0717.5	5.7	122			
	2695	ATHN	4 S/F	0713.7	0717.4	61.9	97.9	29.4		
	9100	GORK	21 GRF	0714	0728.7	136	21			
	1420	ARCE	)	0714.1	0714.5	1.8				
	1420	ARCE	46 C/F	0714.1	0717.1	6.5				
	2695	MANI	4 S/F	0714.3	0717.4	4.7	70.4	46.9		
	1415	MANI	2 S/F	0714.4	0717.3	3.6	9.6	6.4		
	4995	ATHN	20 GRF	0714.4	0717.6	37.6	12.4	7.4		
	1470	BERL	4	0714	0717	6	19			
	8800	ATHN	20 GRF	0715.4	0732.4	57.2	20	12		
	1420	ARCE		0715.9	0717.1	4.7				
	9500	BERL	20	0715	0731	58	13			
	6100	KISV	45 C	0822	0833.3	13	8			
	29	UPIC	8 S	0824.1	0824.4	.5				
	33	UPIC	8 S	0824.2	0824.3	.6				
	10500	BERN	3 S	0832.7	0833.4	4	8	23		
	8800	ATHN	3 S	0832.7	0833.3	3.1	33.3	10		
	9100	GORK	1 S	0833	0833.5	1.8	22	11		
	15000	KISV	23 PBI	0833	0834	3	29			

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	9100	ARCE	3 S	0833	0833.6	2.6				
	9100	ARCE	3 S	0844.4	0845.2	2.2				
	3100	CRIM	25 R	0857	0935	100 D	4			
	245	SGMR	44 NS	0915 E	1709	891 D	22.8			
	410	SGMR	44 NS	0915 E	1556	891 D	10.8			
	6100	KISV	21 GRF	1022	1043	38	11			
	3100	CRIM	1 S	1022 U	1024.5	12	4	1		
	1420	ARCE	20 GRF	1023.8	1040.6	55				
	10500	BERN	3 S	1037.4	1041	7.5	6	18		
	9100	ARCE	21 GRF	1038.9	1049.6	34				
	4995	SGMR	3 S	1038.9	1040.5	3.6	11.2	4.5		
	3100	CRIM	3 S	1039	1040	4	20	7		
	2695	SGMR	3 S	1039	1039.9	3.9	35	14		
	2695	ATHN	3 S	1039	1039.8	10.3	28.9	8.7		
	4995	ATHN	3 S	1039.2	1041.6	19.9	13.1	3.9		
	3000	BERL	3	1039	1039.2	2.50	24			
	8800	SGMR	3 S	1040.2	1041.2	2.8	16.2	6.5		
	8800	ATHN	3 S	1040.7	1041.3	5.1	25.6	7.7		
	9100	ARCE	3 S	1040.8	1041.6	4				
	9500	BERL	20	1041	1054	32 D	13			
	1470	BERL	20	1041	1049	64 D	2.9			
	2800	OTTA	26 FAL	1105	1300	115	-5.8	-3		
	6100	KISV	4 S/F	1157	1159.3	13	3			
	9400	HUAN	1 S	1158.3	1159.3	2	6.8	3.8		O
	9500	BERL	1 S	1158	1159	2	8.9			
0	0									
28	2800	OTTA	23 GRF	1307	1604	233	16.2	11.6		
	6100	KISV	23 PBI	1310	1314.3		254			
	9400	HUAN	21 GRF	1310.8	1356.3	54.7	27.1	17.9		O
	29	UPIC	46 C	1311.5	1315.1	7				
	33	UPIC	46 C	1311.5	1315	10.3				
	18	MCMA	6 S	1311	1316	8			1	
	245	SGMR	6 S	1312	1317.2	9	62.1	24.8		SWF
	410	SGMR	6 S	1312	1317.3	9	14.5	5.8		SWF
	2695	BCUL	4 SF	1312	1314	5	14	5		
	260	ONDR	46 C	1312.5		4	22	10		
	1470	BERL	4	1312.5	1314	4.5	13			
	9500	BERL	3	1312.5	1314.9	6.5	47			
	9400	HUAN	3 S	1312.8	1315	6.4	50.8	25.2		R
	1420	ARCE	4 S/F	1312.8	1314.4	6				
	113	POTS		1312.9	1317	5.1	750	5		
	606	SGMR	3 S	1312.9	1314.7	6.1	28.6	11.4		SWF
	1415	SGMR	3 S	1312.9	1314.7	6.1	15.1	6		SWF
	1420	BCUL	4 SF	1312	1314	9.5	22	3		
	3000	BERL	4	1312	1314.1	8	95			
	10500	BERN	3 S	1313	1315.3	8.2	15	43		
	2800	OTTA	3 S	1313	1315	8	85.2	23		
	8800	SGMR	3 S	1313	1315.2	7	61.2	24.5		SWF
	4995	SGMR	3 S	1313	1315.3	8	105	42		SWF
	15400	SGMR	3 S	1313	1315.2	7	29.5	11.8		SWF
	2695	ATHN	4 S/F	1313.2	1315.2	4.2	73.8	22.1		
	4995	ATHN	4 S/F	1313.2	1315.3	60.3	118.1	35.4		
	9100	ARCE	3 S	1313.4	1315.3	6				
	9100	ARCE	21 GRF	1313.4	1337.7	58.5				
	15000	KISV	2 S/F	1313.5	1315.5	6	24			
	8800	ATHN	4 S/F	1313.5	1315.1	56.2	64.1	19.2		
	4995	BCUL	3 S	1313	1315.5	8.5	192	64		
	228	HARS	45 C	1317	1317.6	1.1	47	20		
	9400	HUAN	1 S	1337	1337.5	2.9	11.9	8.6		O
	1420	ARCE	22 GRF	1455.6	1502.4	59				
	9400	HUAN	46 C	1456.4	1501.5	8.8	191.5	94.4		L
	1420	BCUL	4 SF	1456.5	1501	7.5	21	7		
	10500	BERN	46 C	1456.9	1501.6	48	60	174		
	2800	OTTA	46F C	1457	1501.3	7	34.2	18.5		
	15400	SGMR	3 S	1457	1457.8	9.5	225	67.5		SWF
	4995	ATHN	4 S/F	1457.1	1501.7	44.2	101.7	30.5		
	8800	SGMR	3 S	1457.6	1501.5	8.9	378	113		SWF
	9100	ARCE	4 S/F	1457.7	1501.6	8				
	4995	SGMR	3 S	1457.9	1501.3	7.2	84	25.2		SWF
	1415	SGMR	20 GRF	1457.9	1506.6	17.8	8.9	3.6		SWF
	35000	SGMR	3 S	1458	1458.9	9.5	155	46.5		SWF
	2695	SGMR	3 S	1458	1458.9	6.3	42.1	12.6		SWF
	8800	ATHN	4 S/F	1458	1501.8	44	281	84.3		
	2695	ATHN	3 S	1458.1	1501.6	39.7	25.7	7.7		
	4995	BCUL	4 SF	1458.5	1502 U	6.50	85	28		
	1420	BCUL	29 PBI	1504.5	1504.5	23	8	3		
	9400	HUAN	29 PBI	1505.2	1505.2	98.8	39	7.7		O
	9100	ARCE	29 PBI	1505.7		73				
	2800	OTTA	29 PBI	1604	1604	40	14.8	7.4		
	2800	OTTA	32 ABS	1715	1735	53	-3.8	-2.2		
	2800	OTTA	21 GRF	1810	1820	240	8.8	4		
	2800	OTTA	21 GRF	1959.8	2004	25	2	1		
	2800	OTTA	1 S	2000.2	2001.2	1.5	3	1.5		

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	2800	OTTA	21 GRF	2030	2036.5	50	3.6	1.8		
	2800	OTTA	8 S	2036.3	2036.3	0.2	53			
	2800	OTTA	20 GRF	2230	2235	30	2.4	1.2		
	2695	PENT	240 R	2305	2345	40	4.4	2		
29	2695	PENT	1 S	0016	0016.7	2	2	1		
	2695	PENT	3 S	0126	0127.8	6	12	4		
	1400	SYDN	1 S	0127	0128	3				
	9500	BERL	20	0653	0705	83	6.5			
	6100	KISV	4 S/F	0655	0657	5	8			
	2950	GORK	4 S/F	0655.5	0657.5	3.9	18	9		
	3000	BERL	3	0656.5	0657.3	1.5	13			
	1470	BERL	1 S	0657	0657.4	1.5	2.7			
	3100	CRIM	1 S	0657	0658	2	7	2		
	221	ABST	43 NS	0721.2	0731.8	25	10			
	410	SGMR	44 NS	0915 E	1023.1	892 D	31.5			
	245	SGMR	44 NS	0915 E	1926.2	892 D	8.1			
	3100	CRIM	1 S	0955	0955.5	1	3	1		
	29	UPIC	45 C	1016.1	1016.3	2.5				
	33	UPIC	45 C	1016	1016.8	2.5				
	29	UPIC	2 S/F	1022.8	1023.8	1.5				
	33	UPIC	2 S/F	1022.8	1023.1	.9				
	6100	KISV	45 C	1038	1056	12	9			
	1470	BERL	20	1038	1101.5	125	7.1			
	3100	CRIM	20 GRF	1040	1053	42	7	2		
	2800	OTTA	20 GRF	1040		70	4.4	2.2		
	3000	BERL	20	1045	1049.5	68 D	15			
	2950	GORK	3 S	1048.8	1049.8	11	14			
	9500	BERL	20	1050	1055.5	53 D	8			
	2800	OTTA	20 GRF	1505	1515	90	4.4	2.2		
	245	SGMR	6 S	1507.9	1508.8	5.3	30.4	12.1		
	410	SGMR	6 S	1508.6	1508.7	.4	15.8	6.3		
	2800	OTTA	21 GRF	1650		195	4.6	2.3		
	10500	BERN	4 S/F	1719.1	1719.8	4	26	76		
	15400	SGMR	3 S	1719.4	1720	2.6	157	62.8		
	4995	SGMR	3 S	1719.4	1719.9	2.3	11.1	4.4		
	8800	SGMR	3 S	1719.4	1720	2.6	58	23.2		
	9100	ARCE	3 S	1719.4	1719.9	2.6				
	2800	OTTA	1 S	1746	1747.5	4	3.6	1.8		
	10500	BERN	46 C	1753.9	1758.2	18.50	71	207		
	1420	BCUL	3 S	1755	1758	43	63	21		
	2800	OTTA	3 S	1756.5	1757.8	5.5	205	46		
	2695	BOUL	4 SF	1756.5	1758	8	140	47		
	8800	SGMR	3 S	1756.8	1758.2	6.7	230	92		SWF
	4995	SGMR	3 S	1757	1758.1	6.5	341	136		SWF
	2695	SGMR	3 S	1757	1758.1	6	253	101		SWF
	1415	SGMR	3 S	1757.6	1758.5	5.4	186	74.4		SWF
	9100	ARCE	3 S	1757.6	1758.2	6				AT SUNSET
	4995	BOUL	4 SF	1757	1759	7.5	492	164		
	15400	SGMR	3 S	1758.3	1759.5	4.7	106	42.4		SWF
	2800	OTTA	29 PBI	1802	1802	38	11.6	3.8		
	2695	BCUL	29 PBI	1804.5	1804.5	38.5	5	2		
	4995	BOUL	29 PBI	1805	1805	35.5	23	8		
	2800	OTTA	23 GRF	2105	2200	105	4.4	2.2		
	410	SGMR	48 GB	2240.6	2243	3.6	1200	480		
	606	SGMR	3 S	2241.3	2241.5	.9	372	149		
	606	MANI	4 S/F	2242	2242.4	1.1	47.7	15.9		
	2800	OTTA	1 S	2242	2242.5	1.5	4.4	2.2		
	4995	BOUL	1 S	2242	2243	3	10	3		
	2695	PENT	20 GRF	2310	2410	110	2.8	1.4		
30	200	HIRA	7 C	0252	0252	.7	450	150		O
	100	HIRA	7 C	0252	0252	.8	3000	1500		WL
	6100	KISV	4 S/F	0404	0409	27	8			
	10500	BERN	1 S	0444.7	0447.7	6	6	17		
	6100	KISV	3 S	0445.5	0448	33	6			
	9100	GORK	2 S/F	0447.4	0447.8	1.5	12	5.5		
	6100	KISV	45 C	0545.5	0713	194	85			
	3100	CRIM	21 GRF	0602	0632	56	6	2		
	260	ONDR	4 S/F	0603	0604.8	2.5	29	6		
	9100	GCRK	21 GRF	0609.8	0721.3	203	63	27		
	3100	CRIM	1 S	0611	0616	9	4	1		
	10500	BERN	45 C	0612.2	0616	9.5	13	34		
	15000	KISV	45 C	0613	0714	157	168			
	8800	ATHN	3 S	0615.3	0616	7.5	31	9.3		
	4995	ATHN	3 S	0615.5	0617.4	7	11.2	3.4		
	9100	GORK	2 SF	0615.7	0616	2.4	27	13		
	221	ABST	6 S	0618.8	0619	1	28			
	3100	CRIM	1 S	0627	0628	4	12	4		
	202	IZMI	41 F	0701	0701.5	2	110			
	808	ONDR	46 C	0708	0709.3	4	109	21		
	10500	BERN	22 GRF	0711.2	0714.3	57.5	33	94		
	2695	ATHN	45 C	0712.2	0714	54.5	30.3	10.8		
	2695	ATHN	45 C	0712.2	0721.1		41.7			
	9100	ARCE	3 S	0712.4	0715	4.4				

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	4995	ATHN	4 S/F	0712.5	0714	55.5	56.2	16.9		
	1470	BERL	4	0712.5	0718.8	153	17			
	9500	BERL	4	0712.5	0714	143	83			
	4995	MANI	3 S	0713	0714	4.3	39.5	24.9		
	3100	CRIM	7 GB	0713	0714	15	20	7		
	3100	CRIM	29 PBI	0713	0728	92	12	4		
	3100	CRIM		0713	0721		32.5	11		
	8800	ATHN	4 S/F	0713.1	0714.9	34.2	80.6	24.2		
	8800	MANI	3 S	0713.2	0714.3	3.4	77.6	49.8		
	9100	GORK	4 SF	0713.3	0714.5	3.3	72	30		
	2695	MANI	3 S	0713.5	0721	13.5	31.5	20.9		
	3000	BERL	4	0713	0721	136	38			
	5730	IRKU		0713	0730.7		47			R
	5730	IRKU		0713	0718.2		36			R
	5730	IRKU	23 GRF	0713	0714.1	40	69			R
	9100	ARCE	29 PBI	0716.8	0722.9	97				
	650	GORK	46 C	0717	0719.3	4.4	32	8.5		
	650	GORK		0717	0721.1		27			
	950	GORK	4 S/F	0718.3	0718.5	1.4	24			
	180	GORK	8 S	0718.7	0718.9	.2	330			
	260	ONDR	46 C	0718	0718.8	5	28	2		
	260	ONDR	8 S	0914.3	0914.3	.4	29			
	536	ONDR	8 S	0914	0914	.3	35			
	808	ONDR	3 S	0940	0940	.2	35			
	6100	KISV	29 PBI	0957	1000.5	3	9			
	9500	BERL	22	0958.5	1000	34	13			
	9100	GORK	20 GRF	0959.5	1000.3	10.9	14	6.5		
	10500	BERN	20 GRF	0959.5	1000.4	5	4	12		
	9100	ARCE	20 GRF	0959.9	1007.7	28				
	650	GORK		1110.3	1112.3		9.5			
	650	GORK	45 C	1110.3	1111	2.9	9			
	2800	OTTA	240 R	1120	1130	10	2.8	1.4		
	1470	BERL	20	1120	1154.5	158	3.5			
	3000	BERL	20	1124	1156.5	116	9.5			
	9500	BERL	20	1133	1149	142	10			
	2800	OTTA	21 GRF	1135	1142	150	5.6	2.8		
	938	BORD	46 C	1227.2	1227.3	1	245	4		
	2800	OTTA	1 S	1306.8	1308	3	3	1.5		
	6100	KISV	45 C	1307	1309	9	6			
	16	MCMA	6 S	1411	1414	5			1	
	2800	OTTA	23 GRF	1450	1530	80	12	4		
	9100	ARCE	21 GRF	1519.4	1533.6	67				
	2695	BOUL	45 C	1520.5	1522	9	5	2		
	9400	HUAN	21 GRF	1520.8	1531.4	45.5	14.5	6		O
	245	SGMR	6 S	1521	1524.3	5	15.4	6.2		
	2800	OTTA	1 S	1521.5	1522.3	3	2.8	1.4		
	410	SGMR	48 GB	1522.3	1522.6	3.2	626	250		
	10500	BERN	22 GRF	1525.8	1528	25	6	19		
	1420	BOUL	2 SF	1525	1527	5	6	2		
	2800	OTTA	3 S	1526	1528	4	17.6	6.6		
	4995	ATHN	3 S	1526.1	1528	13.1	33.6	20.1		
	2695	ATHN	3 S	1526.1	1528	13.8	12.4	7.4		
	4995	BOUL	4 SF	1526 E	1528 U	5.5D	32	11		
	8800	ATHN	3 S	1527	1528.1	12.5	44.9	27		
	9400	HUAN	3 S	1527	1527.8	2.8	25.8	13.8		L
	9100	ARCE	1 S	1527	1527.9	2.8				
	1420	BOUL	29 PBI	1530	1532.5U	25	3	1		
	2800	OTTA	20 GRF	1615	1635	65	3.4	2		
	2800	OTTA	21 GRF	1750	2120	300	5.6	2.8		
	9400	HUAN	3 S	1922.1	1926.4	20.2	644.3	144.5		L
	1420	BCUL	3 S	1924.5	1926	6.5	65	22		
	8800	SGMR	47 GB	1924.8	1926.4	16.2	612	245		SWF
	15400	SGMR	47 GB	1925.2	1926.5	11.3	548	219		SWF
	4995	SGMR	3 S	1925.4	1926.6	13.6	354	142		SWF
	2695	BOUL	1 S	1925.5	1926.5	3	8	3		
	2800	OTTA	3 S	1925.5	1926.7	6	77.8	33.6		
	1415	SGMR	1 S	1926.4	1927.3	9.6	4.3	1.7		SWF
	2695	SGMR	3 S	1926.6	1926.7	14.4	78.2	31.3		SWF
	4995	BCUL	3 S	1926	1927	16.5	161	54		
	2695	BOUL	29 PBI	1929.5	1933	26	4	1		
	1420	BCUL	29 PBI	1930.5	1932	43	5	2		
	2800	OTTA	29 PBI	1931.5	1931.5	40	18.8	5.8		
	9400	HUAN	29 PBI	1942.3	1942.3	29.1	48.3	32.8		O
	4995	BCUL	29 PBI	1942.5	1942.5	29.5	25	8		
	2695	PENT	20 GRF	2335	2350	50	2.8	1.6		
	2695	BOUL	46 C	2336.5	2337.5	3	26	9		
31	6100	KISV	1 S	0436	0437	2	2			
	221	ABST	43 NS	0644	0649	32	9			
	260	ONDR	43 NS	0800		80	70			
	410	SGMR	44 NS	0913 E	1634.9	896 D	17.2			
	245	SGMR	44 NS	0913 E	1825.5	896 D	85.3			
	127	TORN	43 NS	1040 E	1043.3	250 D	1400			V=1
	10500	BERN	45 C	0732.4	0734.4	5.5	22	64		
	3100	CRIM	3 S	0733	0735	15	23	8		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1978

MAY 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	6100	KISV	45 C	0733	0734.5	15	13 D			
	3000	BERL	3	0733	0734.5	3.5	19			
	2695	ATHN	3 S	0733.2	0734.1	5.1	15.1	4.5		
	5730	IRKU	45 C	0733.2	0734.5	12	63	9		R
	5730	IRKU		0733.2	0742		9			R
	15000	KISV	45 C	0733.5	0734.5	3	32			
	4995	ATHN	4 S/F	0733.5	0734.2	5	64.1	19.2		
	9500	BERL	4	0733.5	0734.5	20	72			
	2695	MANI	4 S/F	0733.5	0734.6	4.3	14.3	4.7		
	8800	ATHN	4 S/F	0733.6	0734.5	7.4	96.3	28.9		
	8800	MANI	3 S	0733.7	0734.8	3.5	104.9	34.9		
	9100	ARCE	3 S	0733.7	0734.8	2.5				
	9100	GORK	4 SF	0733.8	0734.8	2.8	74	30		
	4995	MANI	3 S	0733.8	0734.7	3.9	42.9	14.4		
	2950	GORK	2 SF	0734	0735.9	2.1	26	13		
	9100	ARCE	30 PBI	0736.2		43.6				
	9100	ARCE	4 S/F	0745.8	0745.9	2				
	1420	ARCE	25 R	0954.2		79				
	1420	KIEL	47 GB	1000	1057	114	1000	170		
	930	BORD	28 PRE	1000	1029.5	31	198	35		
	3100	CRIM	47 GB	1005	1042.5	65	143	48		
	3100	CRIM	30 PBI	1005	1100	150 D	107	36		
	10500	BERN		1007.6	1052.5		27	64		
	10500	BERN	22 GRF	1007.6	1042.9	54	24	70		
	800	KIEL	47 GB	1010	1031	118	1900	150		
	602	KIEL	47 GB	1010	1037	132	1400	100		
	9500	BERL	22	1011	1051.5	289 D	85			
	650	GORK	23 GRF	1012		69				
	3000	BERL	4	1015	1042.9	285 D	290			
	8800	SGMR	3 S	1016	1052	59	84.2	33.7		SWF
	4995	SGMR	3 S	1017	1042	58	75.9	30.6		SWF
	606	SGMR	47 GB	1017	1047	58	1357	543		SWF
	9100	GORK	22 GRF	1018	1043.2	163	80			
	9100	ARCE	21 GRF	1018.1	1043	145				RECORDDISTURBED
	1420	ARCE	46 C/F	1018.3	1056	40.9				
	1420	ARCE		1018.3	1040.8	32.6				
	1470	BERL	4	1018	1056.6	282 D	900			
	405	KIEL	47 GB	1018	1050	126	450	80		
	408	TRST	49 GB	1019	1049.9	120	560			
	2695	SGMR	3 S	1020	1043	55	123	49.2		SWF
	245	SGMR	7 S	1020	1042	55	288	115		SWF
	410	SGMR	49 GB	1020	1050.1	55	585	234		SWF
	1415	SGMR	47 GB	1020.5	1057.5	54.5	1139	555		SWF
	260	ONDR	49 GB	1020		85 D	145	102		
	536	ONDR	49 GB	1020	1046.6	85 D	332	101		
	808	ONDR	49 GB	1020		85 D	596 D	376 D		
	650	GORK		1021	1037.2					
	650	GORK		1021	1047.2					
	650	GORK		1021	1041.3					
	650	GORK	46 C	1021	1029.1	28.1				
	234	POTS	45 C	1021	1041	279 D	190			
	240	KIEL	47 GB	1021	1042	131	220	50		
	228	HARS	28 PRE	1025	1031	7	53			
	237	TRST	47 GB	1025.2	1041.6	180.5	370			27L
	237	TRST		1025.2	1212.6		150			100R
	237	TRST		1025.2	1144.3		145			81R
	237	TRST		1025.2	1129.2		130			68R
	237	TRST		1025.2	1055		300			16R
	237	TRST		1025.2	1048.5		210			3R
	202	IZMI	25 R	1027.9	1042	92.1	280	50		
	200	GORK	46 C	1027	1040 U	140	29			
	200	GORK		1027	1114		110			
	200	GORK		1027	1213		110			
	100	GORK	27 RF	1028		152		500		
	15000	KISV	45 C	1031.5	1032.5	185	67			
	6100	KISV	45 C	1031.5	1043.5		113			
	930	BORD		1031	1056.5		494			
	930	BORD		1031	1055		553			
	930	BORD		1031	1036		593			
	930	BORD		1031	1032		632			
	930	BORD	46 C	1031	1045	30	790	280		
	930	BORD		1031	1033		593			
	2695	ATHN	20 GRF	1032.7	1043.5	194.8	136.2	81.7		
	1415	ATHN	47 GB	1032.7	1043.6	192.8	143.9	72		
	113	POTS	45 C	1032	1042	288 D	180			
	8800	ATHN	20 GRF	1033	1043	193.3	65.9	39.5		
	228	HARS	28 PRE	1033	1035	4	75			
	4995	ATHN	20 GRF	1033.6	1043.1	192.4	83.7	50.2		
	228	HARS	47 GB	1037	1042	29	270	83		
	228	HARS		1037	1055	11	228			
	228	HARS		1037	1047	3.5	187			
	127	TORN	25 R	1040 E	1053.3	15 U	290			
	29	UPIC	49 GB	1046.1	1102.9	71.9				
	33	UPIC	49 GB	1046.1	1051.6	101.9				
	2800	OTTA		1047	1053.9	373 D	135			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1978

MAY 1978	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	9100	ARCE	8 S	1049.6	1049.7	.6				
	1420	ARCE		1050.9	1056	8.3				
	3100	CRIM	3 S	1051	1053	6	43	14		
	1415	ATHN	47 GB	1057.3	1057.3		1107			
	1420	ARCE	29 PBI	1059.2		78				FLUCTUATIONS
	930	BORD	29 PBI	1101	1103.5	285	138	15		
	950	GORK	40 F	1106 E	1131.2	44	48			
	606	SGMR	3 S	1115	1149	60	212	84.7		
	9400	HUAN	46 C	1132.5E	1134.2U	46.3	151.5	64.1		L
	29	UPIC	29 PBI	1158	1158.6	182.6				
	33	UPIC	29 PBI	1158	1158.2	182.6				
	650	GORK	4 SF	1200.4	1201.2	1.8	24	9.5		
	9400	HUAN	29 PBI	1218.8	1218.8	75	51	15.8		O
	650	GORK	46 C	1246.8	1247.2	6.9	90			
	650	GORK		1246.8	1249		130			
	650	GORK		1246.8	1251.8		27			
	650	GORK		1246.8	1253.3		29			
	9100	ARCE	1 S	1527.2	1527.4	.6				
	9100	ARCE	3 S	1534.9	1535.2	1.4				
	9100	ARCE	41 SER	1534.9	1537	3.7				
	9100	ARCE	3 S	1536.6	1537	2.3				
	9100	ARCE	1 S	1550.2	1553.8	5				
	18	MCMA	6 S	1843	1850	4			1	
	2800	OTTA	26 FAL	1900	1925	25	-4.2	-2.1		
	2695	PENT	21 GRF	2330	2417	125	3.4	1.7		
	2695	PENT	1 S	2406	2408	6	7.4	3.7		

Reports received from the following observatories:

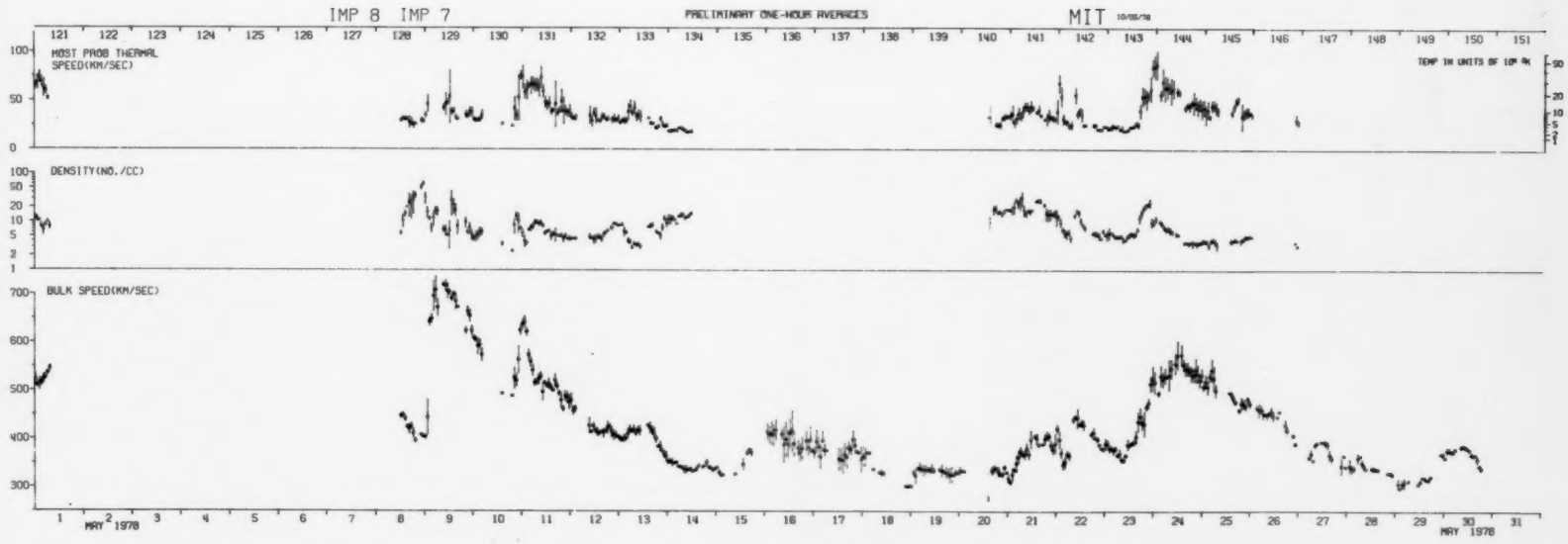
ARCE = Arcetri
BERL = Berlin-Adlershof
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
NAGO = Nagoya
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

IMP 7 AND 8 SOLAR WIND PLASMA

MAY 1978



APRIL 1978 DATA

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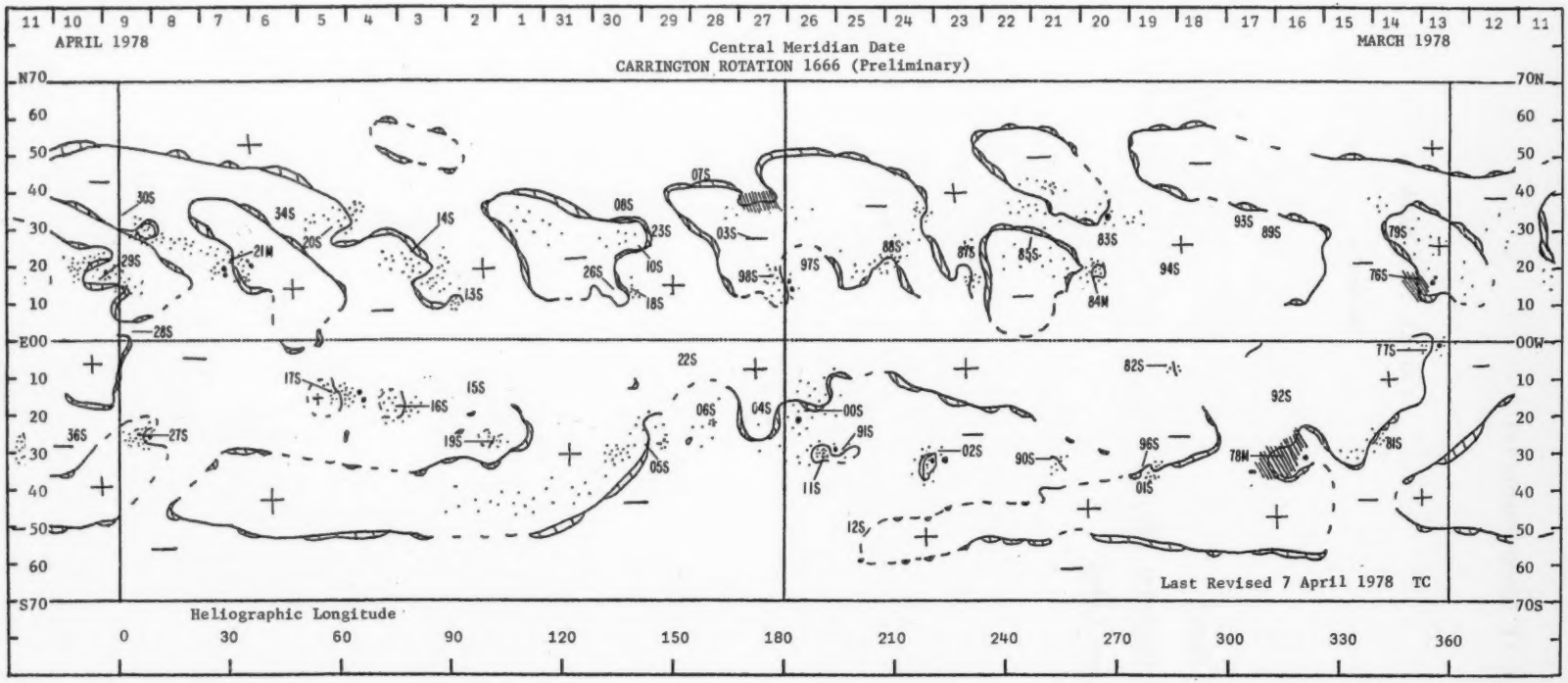
Regional Flare Index	66

ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

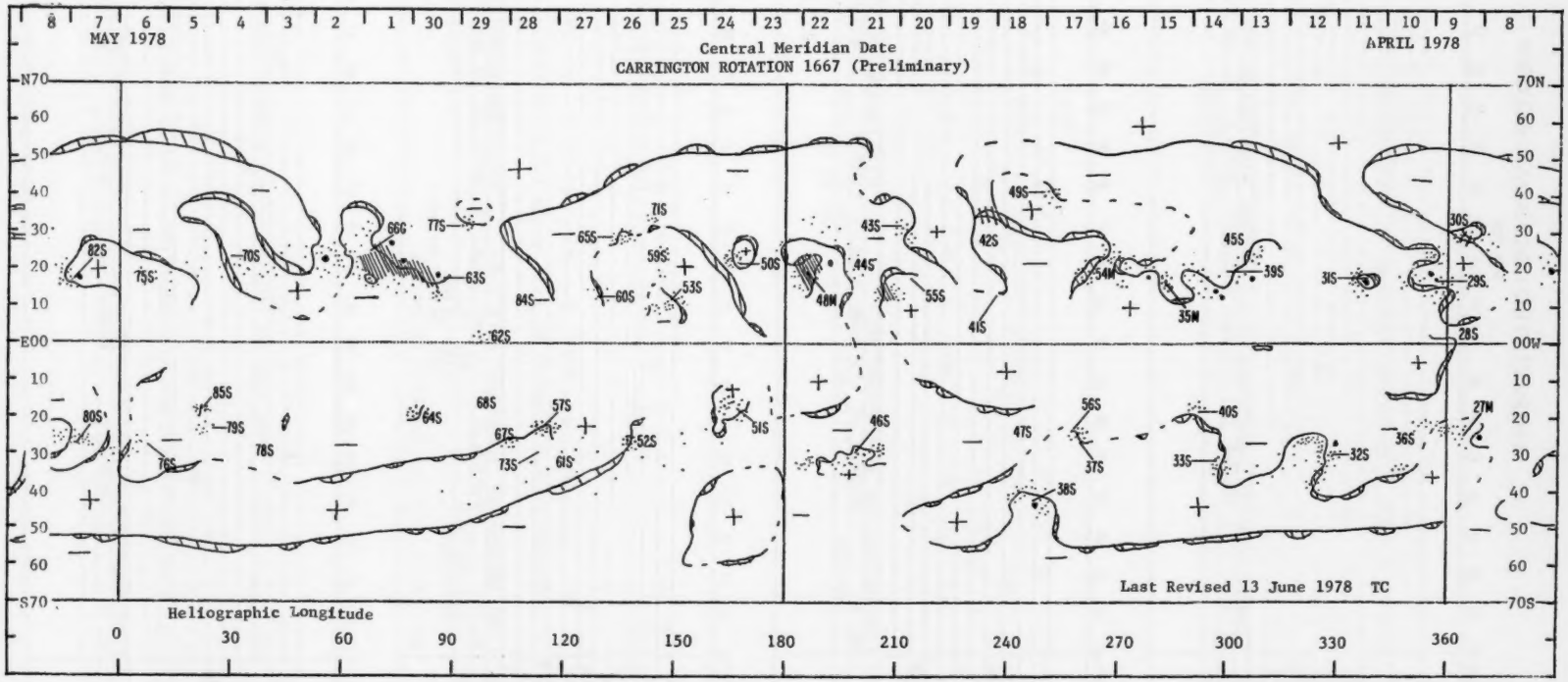
MARCH - APRIL 1978



ABBREVIATED CALENDAR RECORD

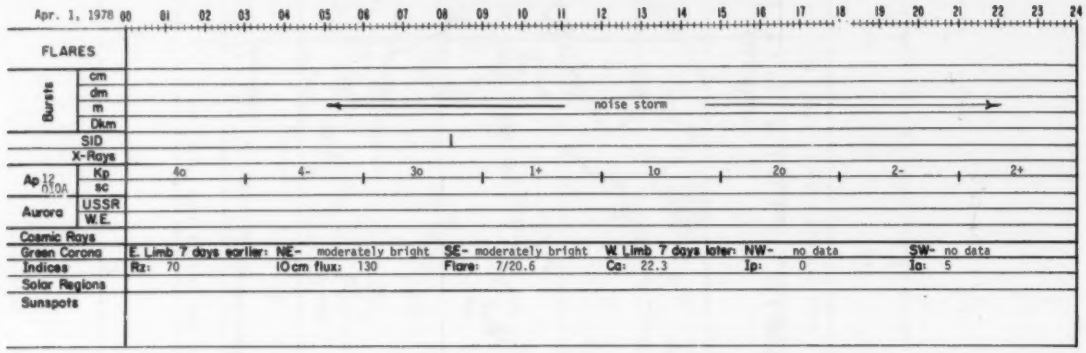
Hα SYNOPTIC CHART

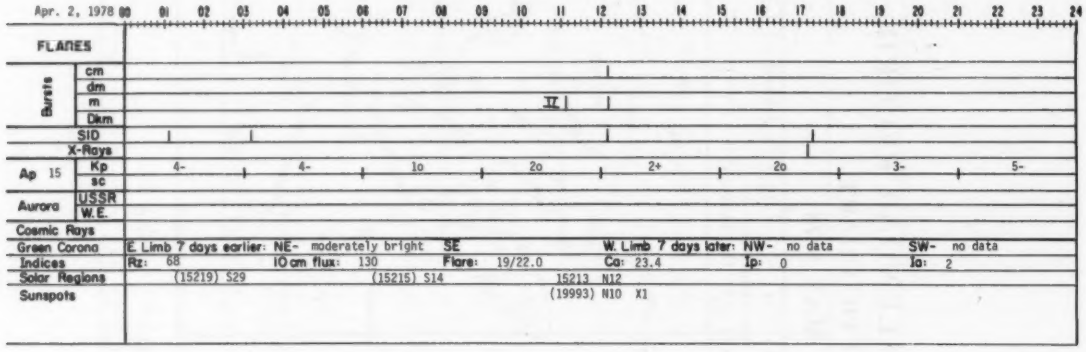
APRIL - MAY 1978

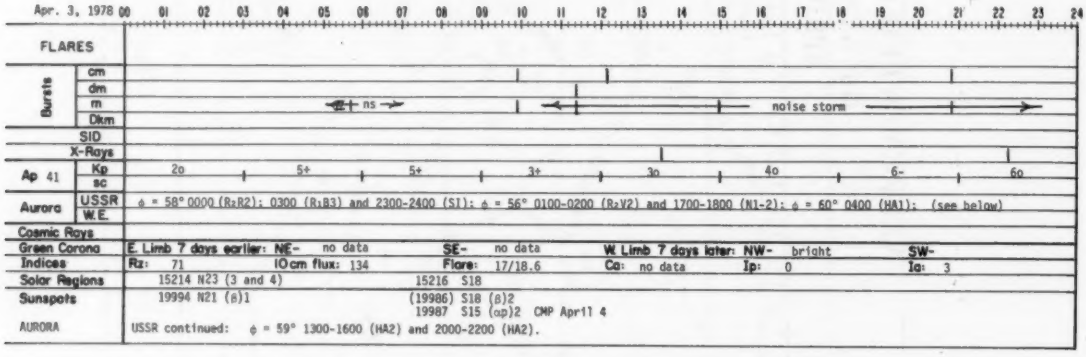


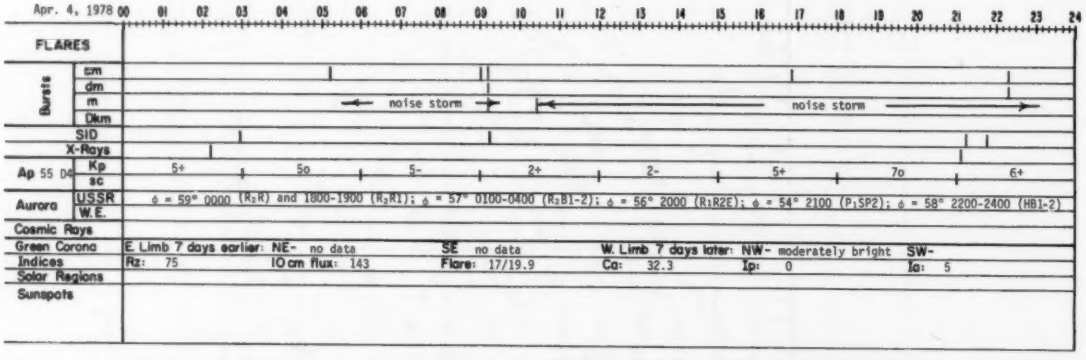
ABBREVIATED CALENDAR RECORD

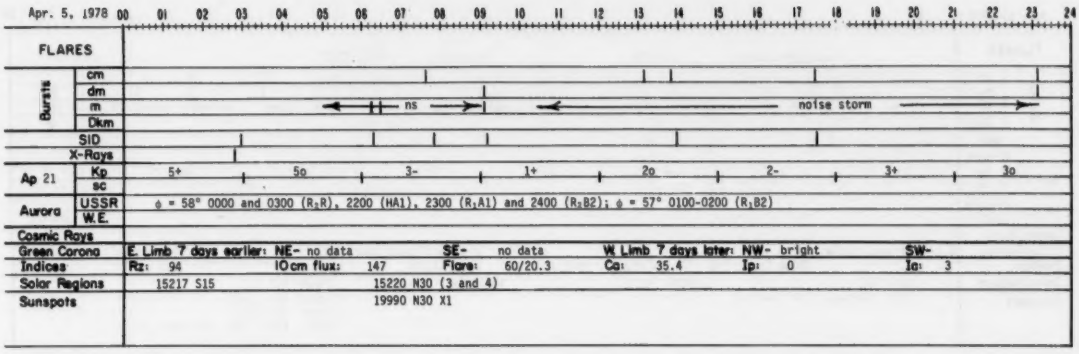
APRIL 1978

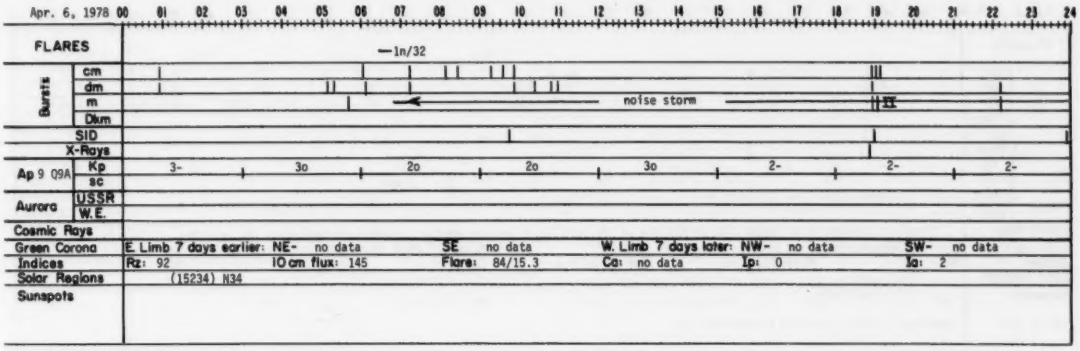


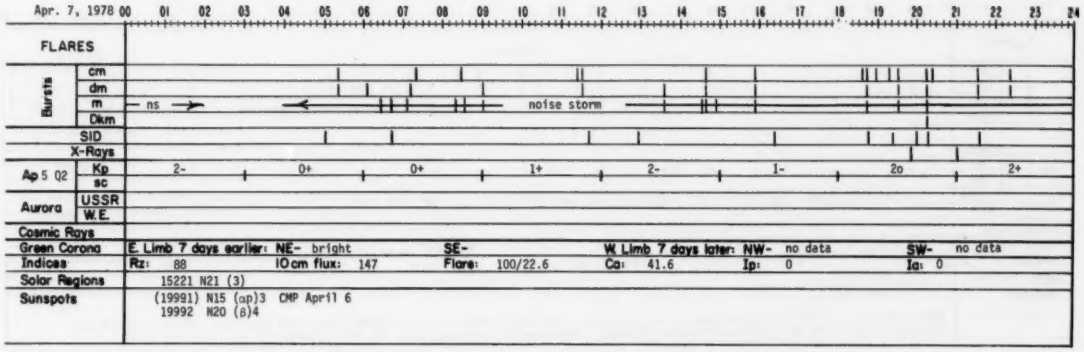


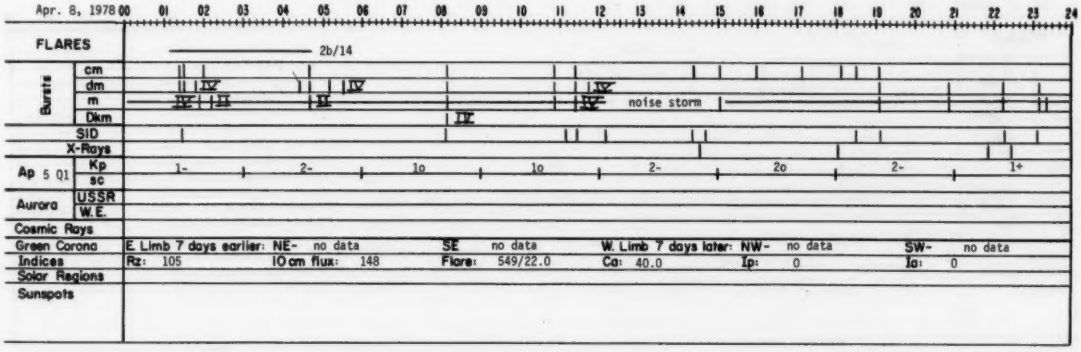

Apr. 3, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
ns
noise storm
Dkm
SID
X-Rays
Ap 41
Kp
sc
2o 5+ 5+ 3+ 3o 4o 6- 6o
Aurora
USSR
ϕ = 58° 0000 (R2R2); 0300 (R1B3) and 2300-2400 (S1); ϕ = 56° 0100-0200 (R2V2) and 1700-1800 (N1-2); ϕ = 60° 0400 (HA1); (see below)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- bright SW-
Indices
Rz: 71 10cm flux: 134 Flare: 17/18.6 Ca: no data Ip: 0 Ia: 3
Solar Regions
15214 N23 (3 and 4) 15216 S18
Sunspots
19994 N21 (β)1 (19986) S18 (β)2
19987 S15 (αp)2 CMP April 4
AURORA
USSR continued: ϕ = 59° 1300-1600 (HA2) and 2000-2200 (HA2).

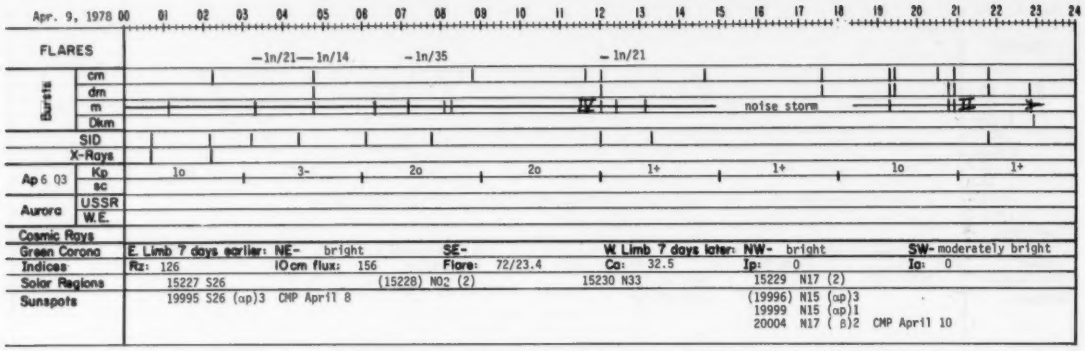

Apr. 4, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
noise storm
noise storm
Dkm
SID
X-Rays
Ap 55 0400A
Kp
sc
5+ 5o 5- 2+ 2- 5+ 7o 6+
Aurora
USSR
ϕ = 59° 0000 (R2R) and 1800-1900 (R2R1); ϕ = 57° 0100-0400 (R2B1-2); ϕ = 56° 2000 (R1R2E); ϕ = 54° 2100 (P1SP2); ϕ = 58° 2200-2400 (HB1-2)
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- moderately bright SW-
Indices
Rz: 75 10cm flux: 143 Flare: 17/19.9 Ca: 32.3 Ip: 0 Ia: 5
Solar Regions
Sunspots

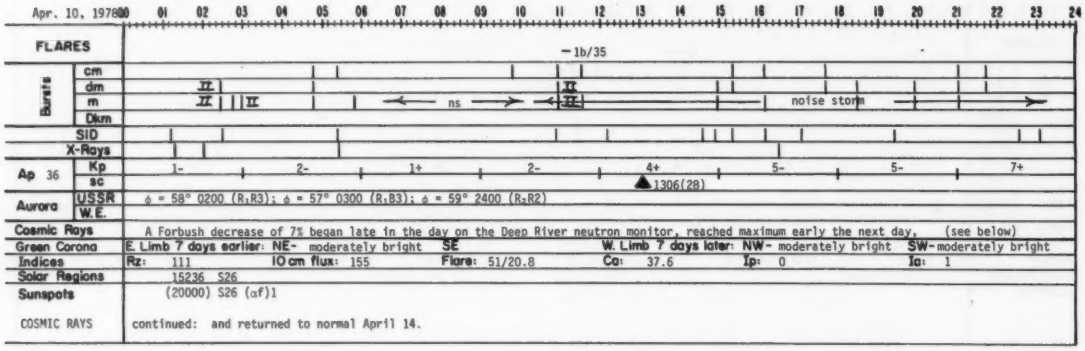

Apr. 5, 1978
FLARES
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 21
Kp
sc
5+ 5o 3- 1+ 2o 2- 3+ 3o
Aurora
USSR
W.E.
φ = 58° 0000 and 0300 (R,R), 2200 (HA1), 2300 (R,A1) and 2400 (R,B2); φ = 57° 0100-0200 (R,B2)
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- bright SW-
Indices
Rz: 94 10cm flux: 147 Flare: 60/20.3 Ca: 35.4 Ip: 0 Ia: 3
Solar Regions
15217 S15 15220 N30 (3 and 4)
Sunspots
19990 N30 X1

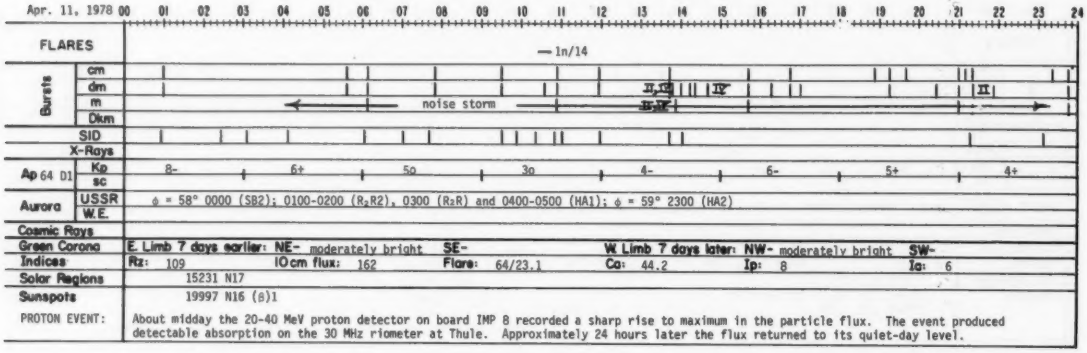

Apr. 6, 1978
FLARES
1n/32
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 9 Q9A
Kp
sc
3- 3o 2o 2o 3o 2- 2- 2-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 92 10cm flux: 145 Flare: 84/15.3 Ca: no data Ip: 0 Ia: 2
Solar Regions
(15234) N34
Sunspots

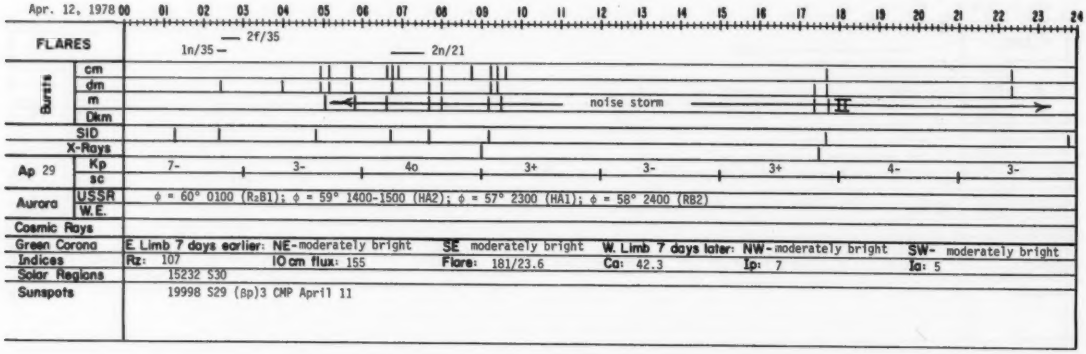

Apr. 7, 1978
FLARES
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 5 Q2
Kp
sc
2- 0+ 0+ 1+ 2- 1- 2o 2+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- bright SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 88 10cm flux: 147 Flare: 100/22.6 Ca: 41.6 Ip: 0 Ia: 0
Solar Regions
15221 N21 (3)
Sunspots
(19991) N15 (ap)3 CMP April 6
19992 N20 (B)4

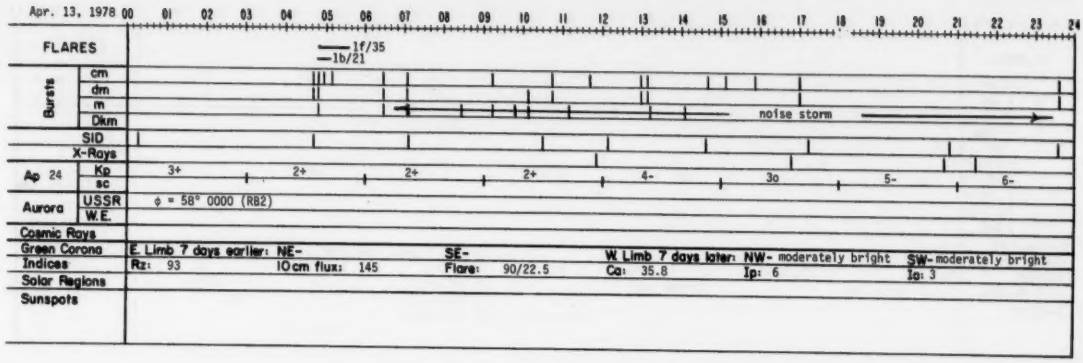

Apr. 8, 1978
FLARES
2b/14
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 5 Q1
Kp
sc
1- 2- 1o 1o 2- 2o 2- 1+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 105 10cm flux: 148 Flare: 549/22.0 Ca: 40.0 Ip: 0 Ia: 0
Solar Regions
Sunspots

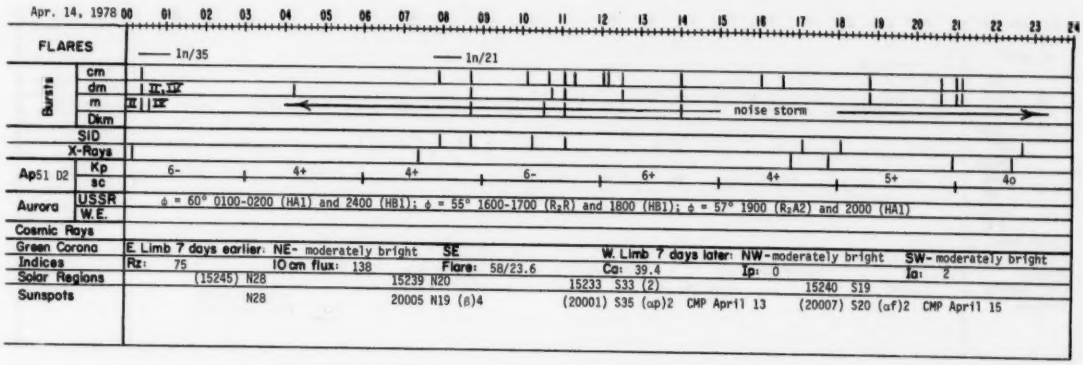

Apr. 9, 1978
FLARES
1n/21
1n/14
1n/35
1n/21
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 6 Q3
Kp
sc
1o
3-
2o
2o
1+
1+
1o
1+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE- bright
SE-
W Limb 7 days later: NW- bright
SW- moderately bright
Indices
Rz: 126
10cm flux: 156
Flare: 72/23.4
Ca: 32.5
Ip: 0
Ia: 0
Solar Regions
15227 S26
(15228) N02 (2)
15230 N33
15229 N17 (2)
Sunspots
19995 S26 (αp)3 CMP April 8
(19996) N15 (αp)3
19999 N15 (αp)1
20004 N17 (β)2 CMP April 10

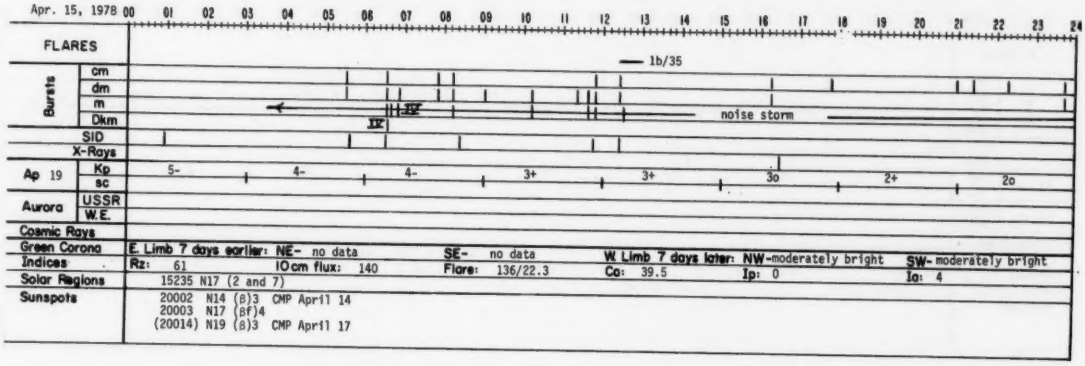

Apr. 10, 1978
FLARES
1b/35
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 36
Kp
sc
1-
2-
1+
2-
4+
5-
5-
7+
1306(28)
Aurora
USSR
W.E.
ϕ = 58° 0200 (R1R3); ϕ = 57° 0300 (R1B3); ϕ = 59° 2400 (R2R2)
Cosmic Rays
A Forbush decrease of 7% began late in the day on the Deep River neutron monitor, reached maximum early the next day. (see below)
Green Corona
E Limb 7 days earlier: NE- moderately bright
SE
W Limb 7 days later: NW- moderately bright
SW- moderately bright
Indices
Rz: 111
10cm flux: 155
Flare: 51/20.8
Ca: 37.6
Ip: 0
Ia: 1
Solar Regions
15236 S26
Sunspots
(20000) S26 (αf)1
COSMIC RAYS
continued: and returned to normal April 14.

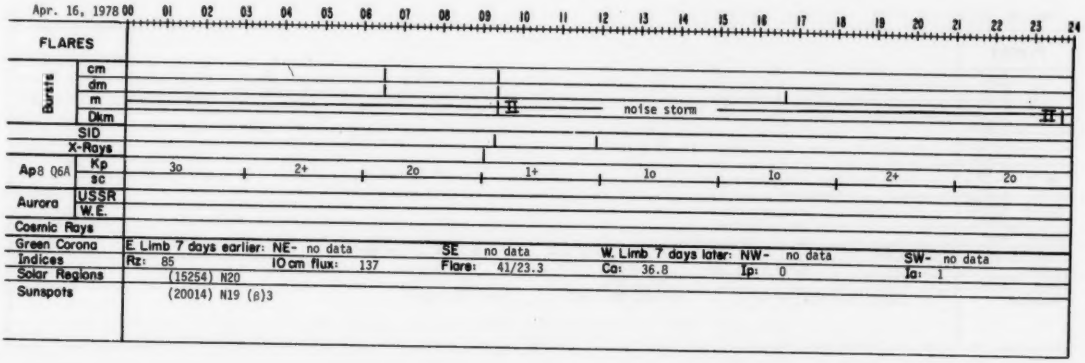

Apr. 11, 1978
FLARES
1n/14
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 64 D1
Kp
sc
8-
6+
5o
3o
4-
6-
5+
4+
Aurora
USSR
W.E.
ϕ = 58° 0000 (SB2); 0100-0200 (R2R2), 0300 (R2R) and 0400-0500 (HA1); ϕ = 59° 2300 (HA2)
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE- moderately bright
SE-
W Limb 7 days later: NW- moderately bright
SW-
Indices
Rz: 109
10cm flux: 162
Flare: 64/23.1
Ca: 44.2
Ip: 8
Ia: 6
Solar Regions
15231 N17
Sunspots
19997 N16 (β)1
PROTON EVENT:
About midday the 20-40 MeV proton detector on board IMP 8 recorded a sharp rise to maximum in the particle flux. The event produced detectable absorption on the 30 MHz riometer at Thule. Approximately 24 hours later the flux returned to its quiet-day level.

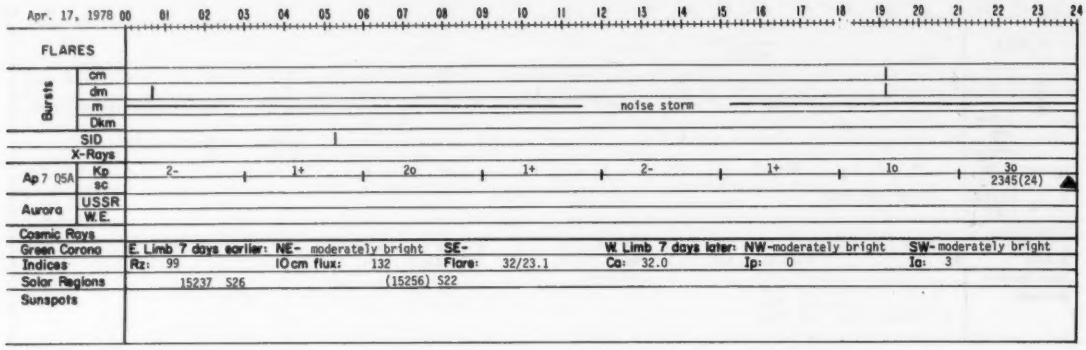

Apr. 12, 1978
FLARES
1n/35
2f/35
2n/21
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 29
Kp
sc
7-
3-
4o
3+
3-
3+
4-
3-
Aurora
USSR
W.E.
ϕ = 60° 0100 (R2B1); ϕ = 59° 1400-1500 (HA2); ϕ = 57° 2300 (HA1); ϕ = 58° 2400 (RB2)
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE-moderately bright
SE moderately bright
W Limb 7 days later: NW-moderately bright
SW- moderately bright
Indices
Rz: 107
10cm flux: 155
Flare: 181/23.6
Ca: 42.3
Ip: 7
Ia: 5
Solar Regions
15232 S30
Sunspots
19998 S29 (βp)3 CMP April 11

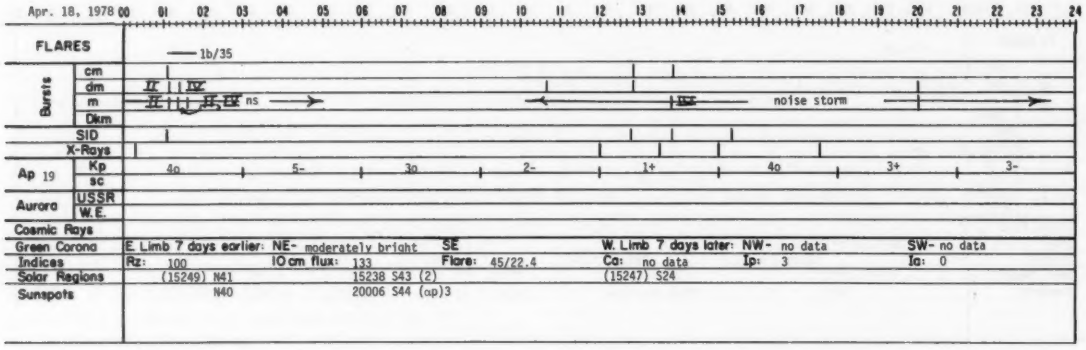

Apr. 13, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/35
1b/21
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 24
Kp
3+ 2+ 2+ 2+ 4- 3o 5- 6-
sc
Aurora
USSR
ϕ = 58° 0000 (RB2)
W.E.
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE- SE- W Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 93 10cm flux: 145 Flare: 90/22.5 Ca: 35.8 Ip: 6 Ia: 3
Solar Regions
Sunspots

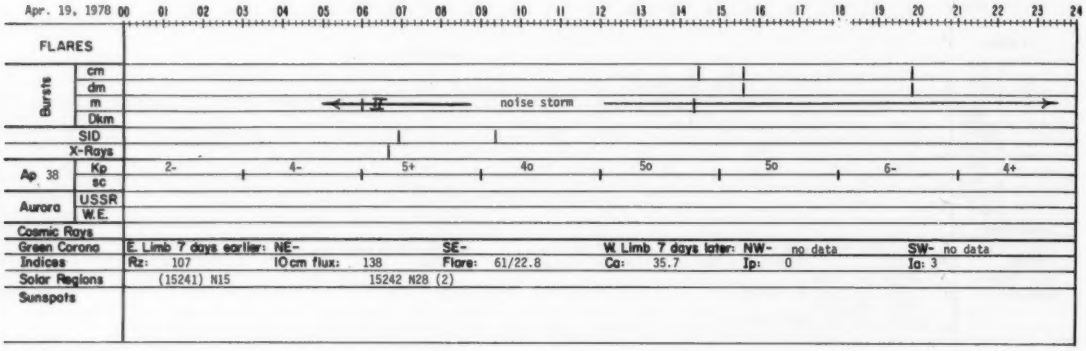

Apr. 14, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/35
1n/21
Bursts
cm
dm
II, III
m
II | IV
Dkm
noise storm
SID
X-Rays
Ap51 D2
Kp
6- 4+ 4+ 6- 6+ 4+ 5+ 4o
sc
Aurora
USSR
ϕ = 60° 0100-0200 (HA1) and 2400 (HB1); ϕ = 55° 1600-1700 (R2R) and 1800 (HB1); ϕ = 57° 1900 (R2A2) and 2000 (HA1)
W.E.
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE- moderately bright SE W Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 75 10cm flux: 138 Flare: 58/23.6 Ca: 39.4 Ip: 0 Ia: 2
Solar Regions
(15245) N28 15239 N20 15233 S33 (2) 15240 S19
Sunspots
N28 20005 N19 (β)4 (20001) S35 (αp)2 CMP April 13 (20007) S20 (αf)2 CMP April 15

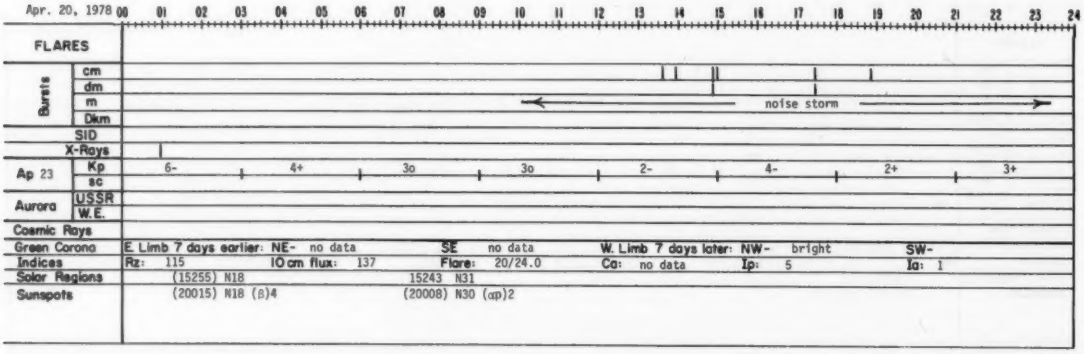

Apr. 15, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1b/35
Bursts
cm
dm
m
IV
Dkm
IV
noise storm
SID
X-Rays
Ap 19
Kp
5- 4- 4- 3+ 3+ 3o 2+ 2o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE- no data SE- no data W Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 61 10cm flux: 140 Flare: 136/22.3 Ca: 39.5 Ip: 0 Ia: 4
Solar Regions
15235 N17 (2 and 7)
Sunspots
20002 N14 (β)3 CMP April 14
20003 N17 (βf)4
(20014) N19 (β)3 CMP April 17

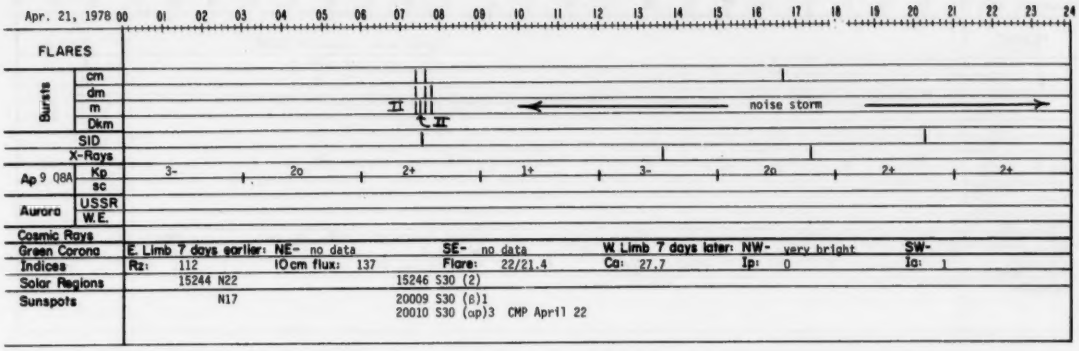

Apr. 16, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
II
Dkm
noise storm
II
SID
X-Rays
Ap8 Q6A
Kp
3o 2+ 2o 1+ 1o 1o 2+ 2o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE- no data SE no data W Limb 7 days later: NW- no data SW- no data
Indices
Rz: 85 10cm flux: 137 Flare: 41/23.3 Ca: 36.8 Ip: 0 Ia: 1
Solar Regions
(15254) N20
Sunspots
(20014) N19 (β)3

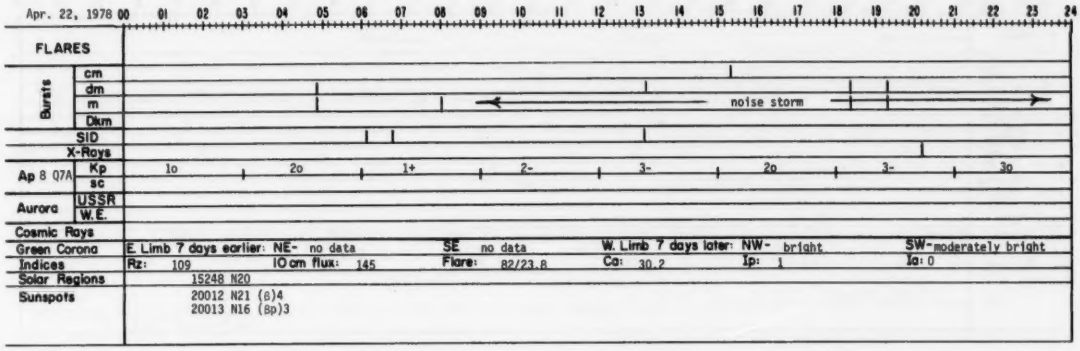

Apr. 17, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 7 QSA
Kp
sc
2- 1+ 2o 1+ 2- 1+ 1o 3o
2345(24)
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE-
W. Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 99 10cm flux: 132 Flare: 32/23.1 Ca: 32.0 Ip: 0 Ia: 3
Solar Regions
15237 S26 (15256) S22
Sunspots

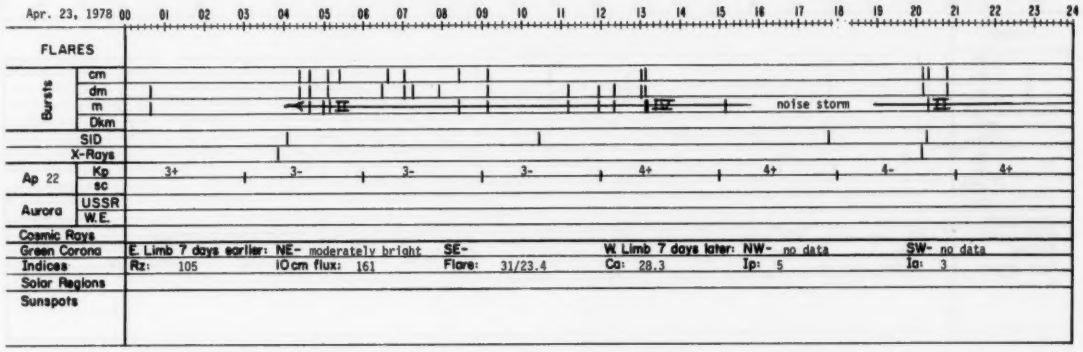

Apr. 18, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1b/35
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 19
Kp
sc
4o 5- 3o 2- 1+ 4o 3+ 3-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE
W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 100 10cm flux: 133 Flare: 45/22.4 Ca: no data Ip: 3 Ia: 0
Solar Regions
(15249) N41 15238 S43 (2) (15247) S24
N40 20006 S44 (αp)3
Sunspots

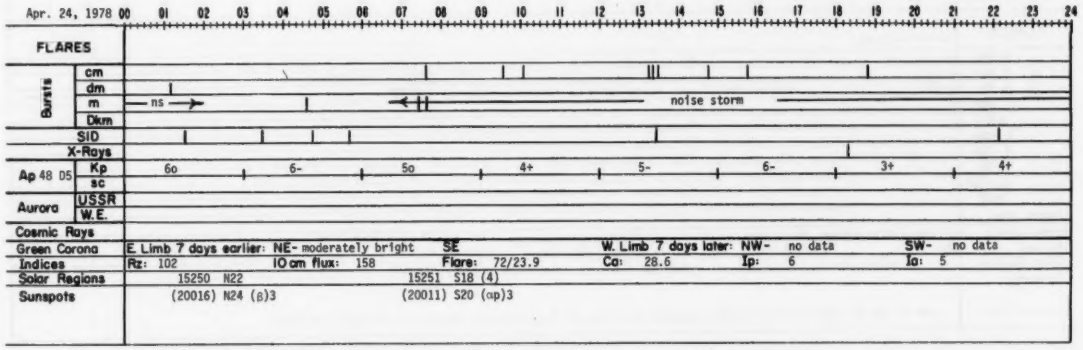

Apr. 19, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 38
Kp
sc
2- 4- 5+ 4o 5o 5o 6- 4+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE-
W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 107 10cm flux: 138 Flare: 61/22.8 Ca: 35.7 Ip: 0 Ia: 3
Solar Regions
(15241) N15 15242 N28 (2)
Sunspots

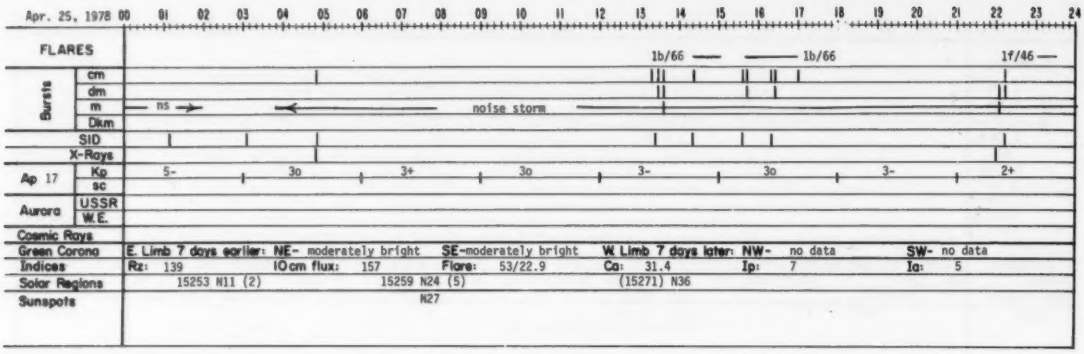

Apr. 20, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 23
Kp
sc
6- 4+ 3o 3o 2- 4- 2+ 3+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data
W. Limb 7 days later: NW- bright SW-
Indices
Rz: 115 10cm flux: 137 Flare: 20/24.0 Ca: no data Ip: 5 Ia: 1
Solar Regions
(15255) N18 15243 N31
Sunspots
(20015) N18 (β)4 (20008) N30 (αp)2

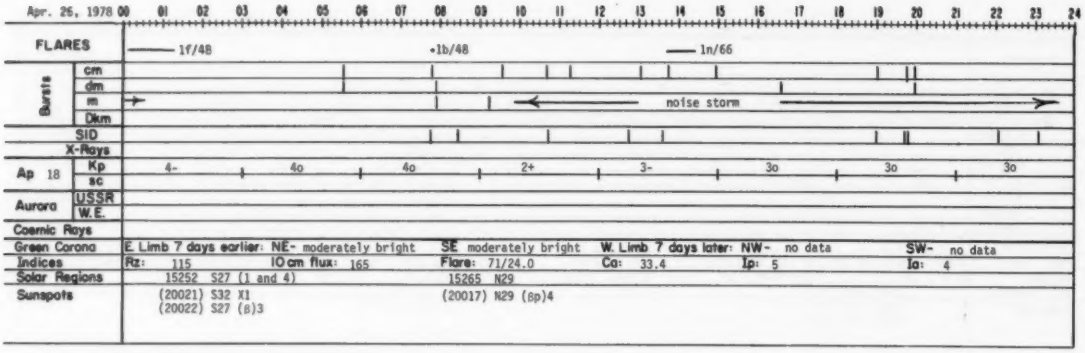

Apr. 21, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 9 Q8A
Kp
3- 2o 2+ 1+ 3- 2o 2+ 2+
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- very bright SW-
Indices
Rz: 112 10cm flux: 137 Flare: 22/21.4 Ca: 27.7 Ip: 0 Ia: 1
Solar Regions
15244 N22 15246 S30 (2)
Sunspots
N17 20009 S30 (β)1
20010 S30 (αp)3 CMP April 22

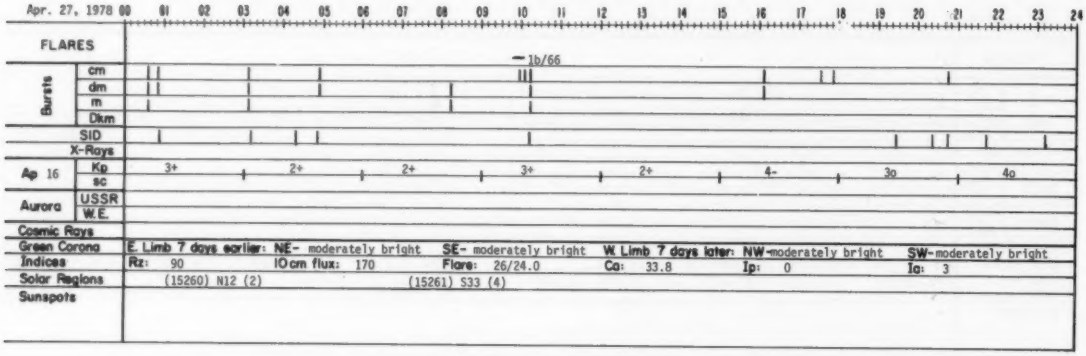

Apr. 22, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 8 Q7A
Kp
1o 2o 1+ 2- 3- 2o 3- 3o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- bright SW- moderately bright
Indices
Rz: 109 10cm flux: 145 Flare: 82/23.8 Ca: 30.2 Ip: 1 Ia: 0
Solar Regions
15248 N20
Sunspots
20012 N21 (β)4
20013 N16 (βp)3

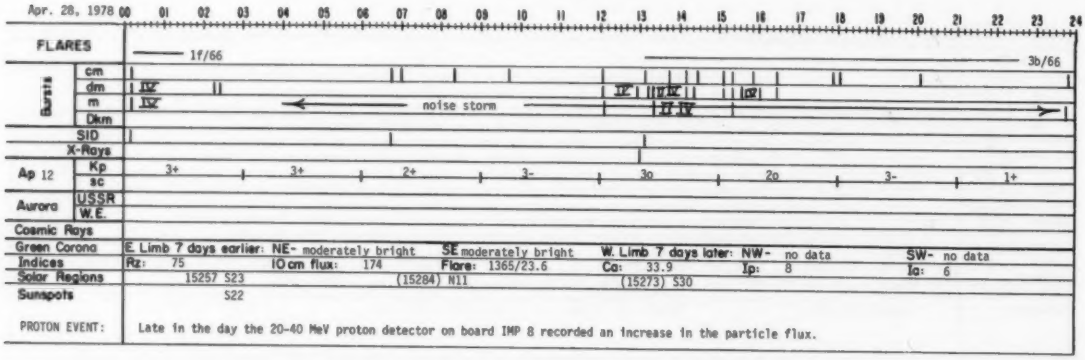

Apr. 23, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 22
Kp
3+ 3- 3- 3- 4+ 4+ 4- 4+
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 105 10cm flux: 161 Flare: 31/23.4 Ca: 28.3 Ip: 5 Ia: 3
Solar Regions
Sunspots

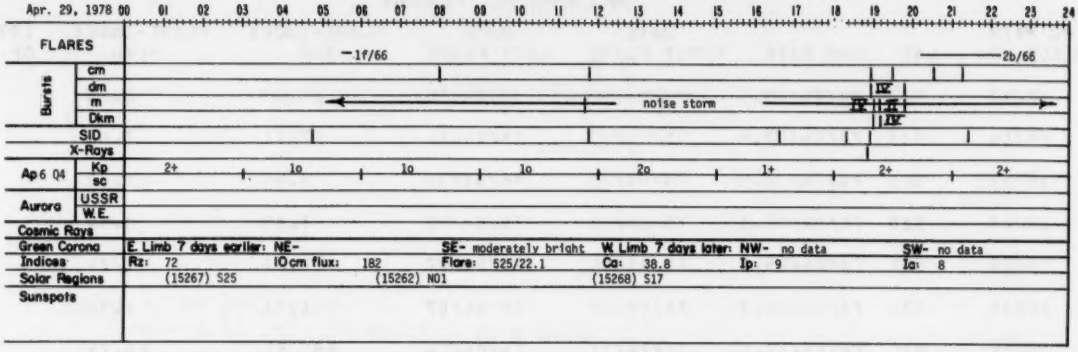

Apr. 24, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 48 D5
Kp
6o 6- 5o 4+ 5- 6- 3+ 4+
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 102 10cm flux: 158 Flare: 72/23.9 Ca: 28.6 Ip: 6 Ia: 5
Solar Regions
15250 N22 15251 S18 (4)
Sunspots
(20016) N24 (β)3 (20011) S20 (αp)3

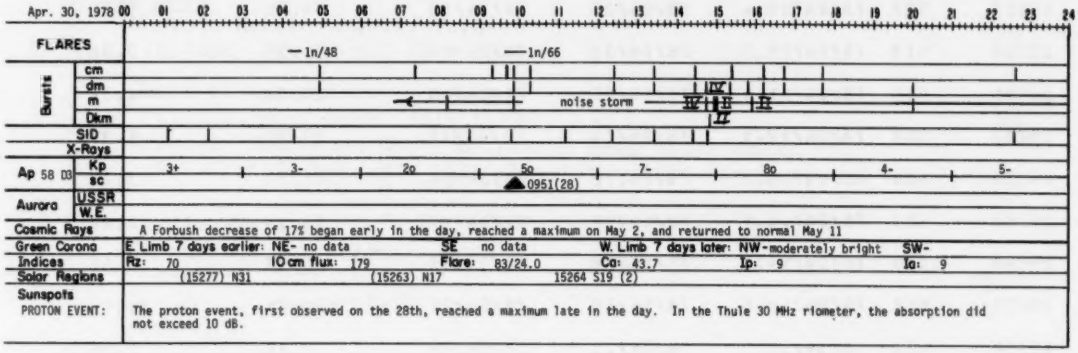

Apr. 25, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1b/66
1b/66
1f/46
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 17
Kp
sc
5- 3o 3+ 3o 3- 3o 3- 2+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE-moderately bright W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 139 IOcm flux: 157 Flare: 53/22.9 Ca: 31.4 Ip: 7 Ia: 5
Solar Regions
15253 N11 (2) 15259 N24 (5) (15271) N36
Sunspots
N27


Apr. 26, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/48
1b/48
1n/66
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 18
Kp
sc
4- 4o 4o 2+ 3- 3o 3o 3o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE moderately bright W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 115 IOcm flux: 165 Flare: 71/24.0 Ca: 33.4 Ip: 5 Ia: 4
Solar Regions
15252 S27 (1 and 4) 15265 N29
Sunspots
(20021) S32 X1 (20017) N29 (8p)4
(20022) S27 (8)3


Apr. 27, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1b/66
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 16
Kp
sc
3+ 2+ 2+ 3+ 2+ 4- 3o 4o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE- moderately bright W. Limb 7 days later: NW-moderately bright SW-moderately bright
Indices
Rz: 90 IOcm flux: 170 Flare: 26/24.0 Ca: 33.8 Ip: 0 Ia: 3
Solar Regions
(15260) N12 (2) (15261) S33 (4)
Sunspots


Apr. 28, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/66
3b/66
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 12
Kp
sc
3+ 3+ 2+ 3- 3o 2o 3- 1+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE moderately bright W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 75 IOcm flux: 174 Flare: 1365/23.6 Ca: 33.9 Ip: 8 Ia: 6
Solar Regions
15257 S23 (15284) N11 (15273) S30
Sunspots
S22
PROTON EVENT:
Late in the day the 20-40 MeV proton detector on board IMP 8 recorded an increase in the particle flux.


Apr. 29, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/66
2b/66
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 6 Q4
Kp
2+ 1o 1o 1o 2o 1+ 2+ 2+
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E Limb 7 days earlier: NE- SE- moderately bright W Limb 7 days later: NW- no data SW- no data
Indices
Rz: 72 10 cm flux: 182 Flare: 525/22.1 Ca: 38.8 Ip: 9 Ia: 8
Solar Regions
(15267) S25 (15262) N01 (15268) S17
Sunspots


Apr. 30, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/48
1n/66
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 58 03
Kp
3+ 3- 2o 5o 7- 8o 4- 5-
sc
0951(28)
Aurora
USSR
W.E.
Cosmic Rays
A Forbush decrease of 17% began early in the day, reached a maximum on May 2, and returned to normal May 11
Green Corona
E Limb 7 days earlier: NE- no data SE no data W Limb 7 days later: NW-moderately bright SW-
Indices
Rz: 70 10 cm flux: 179 Flare: 83/24.0 Ca: 43.7 Ip: 9 Ia: 9
Solar Regions
(15277) N31 (15263) N17 15264 S19 (2)
Sunspots
PROTON EVENT:
The proton event, first observed on the 28th, reached a maximum late in the day. In the Thule 30 MHz riometer, the absorption did not exceed 10 dB.

REGIONAL FLARE INDEX

INCLUDES ALL FLARES

NC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
15213	N13	78/04/02.5	78/04/02	78/04/06	19.47	3.89	5
15214	N23	78/04/03.6	78/03/30	78/04/11	47.01	3.62	20
15216	S18	78/04/03.9	78/03/29	78/03/31	5.45	1.82	3
15217	S15	78/04/05.1	78/04/01	78/04/02	7.09	3.54	2
15220	N31	78/04/05.1	78/03/30	78/04/02	4.99	1.25	4
15234	N34	78/04/06.3	78/04/07	78/04/07	1.96	1.96	1
15221	N21	78/04/07.3	78/04/01	78/04/14	899.56	64.25	95
15227	S27	78/04/09.4	78/04/06	78/04/15	58.91	5.89	22
15229	N18	78/04/09.9	78/04/03	78/04/14	35.56	2.96	11
15231	N18	78/04/11.4	78/04/05	78/04/16	16.03	1.34	4
15232	S30	78/04/12.1	78/04/04	78/04/17	19.20	1.37	8
15239	N20	78/04/14.2	78/04/12	78/04/16	18.76	3.75	6
15233	S33	78/04/14.5	78/04/08	78/04/14	13.14	1.88	6
15240	S19	78/04/14.8	78/04/16	78/04/17	6.93	3.47	2
15235	N17	78/04/15.6	78/04/08	78/04/22	458.91	30.59	112
15254	N20	78/04/16.9	78/04/21	78/04/24	7.84	1.96	9
15237	S26	78/04/17.3	78/04/14	78/04/14	3.38	3.38	1
15238	S43	78/04/19.0	78/04/12	78/04/17	12.11	2.02	6
15255	N18	78/04/20.8	78/04/22	78/04/26	22.22	4.44	10
15243	N31	78/04/21.0	78/04/19	78/04/20	6.77	3.39	2
15244	N23	78/04/21.9	78/04/14	78/04/23	22.31	2.23	12
15246	S30	78/04/22.1	78/04/18	78/04/27	81.59	8.16	28
15248	N20	78/04/22.9	78/04/18	78/04/30	187.69	14.44	62
15250	N23	78/04/24.4	78/04/22	78/04/26	36.52	7.30	10
15251	S19	78/04/24.5	78/04/24	78/04/28	19.84	3.97	5
15252	S27	78/04/26.1	78/04/30	78/05/03	23.86	5.96	18
15265	N29	78/04/26.8	78/04/25	78/04/25	3.38	3.38	1

SGD 411 Part II (Comprehensive)

AL NO. FLARES
5
20
3
2
4
1
95
22
11
4
8
6
6
2
112
9
1
6
10
2
12
28
62
10
5
18
1

Miscellaneous Data

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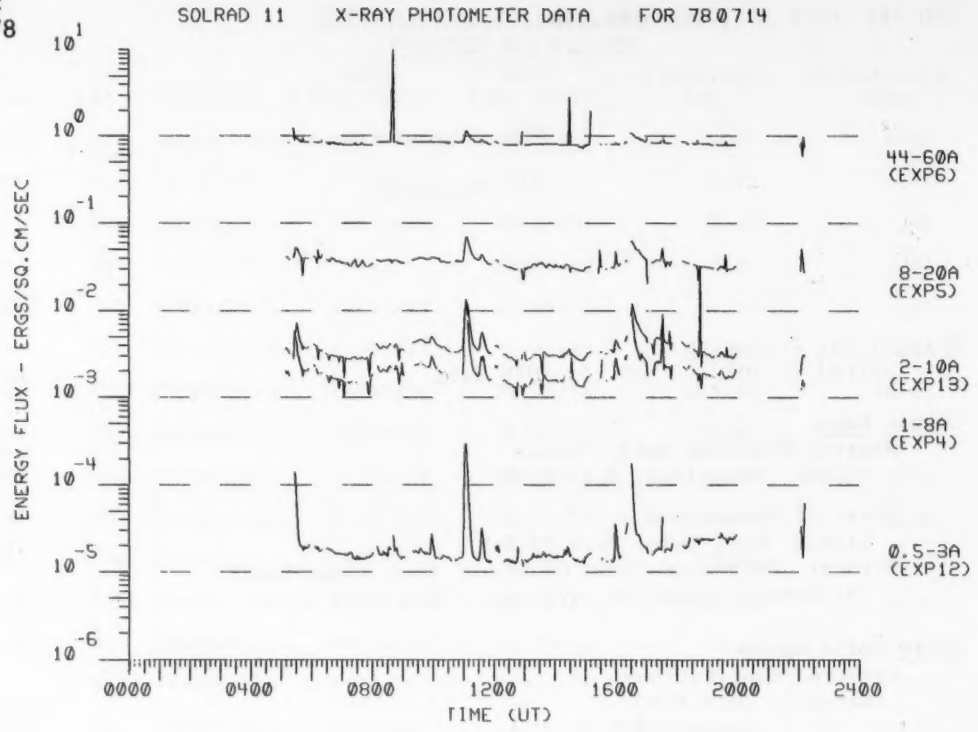
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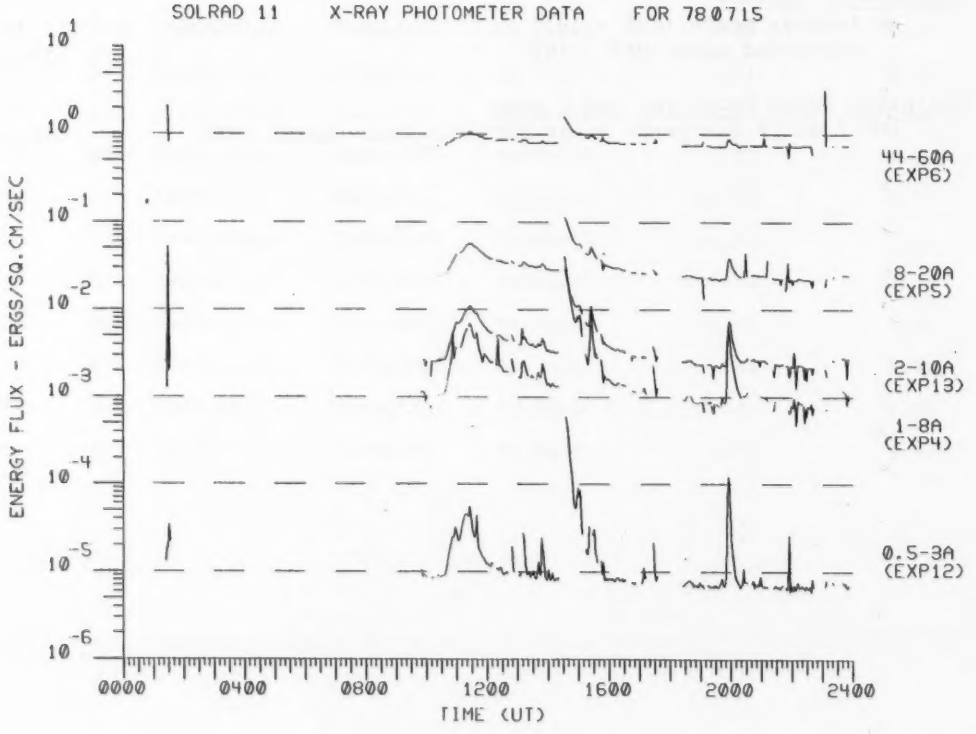
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 780715
ENERGY FLUX - ERGS/SQ.CM/SEC
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10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

COSMIC RAY INDICES
(Neutron Monitors)

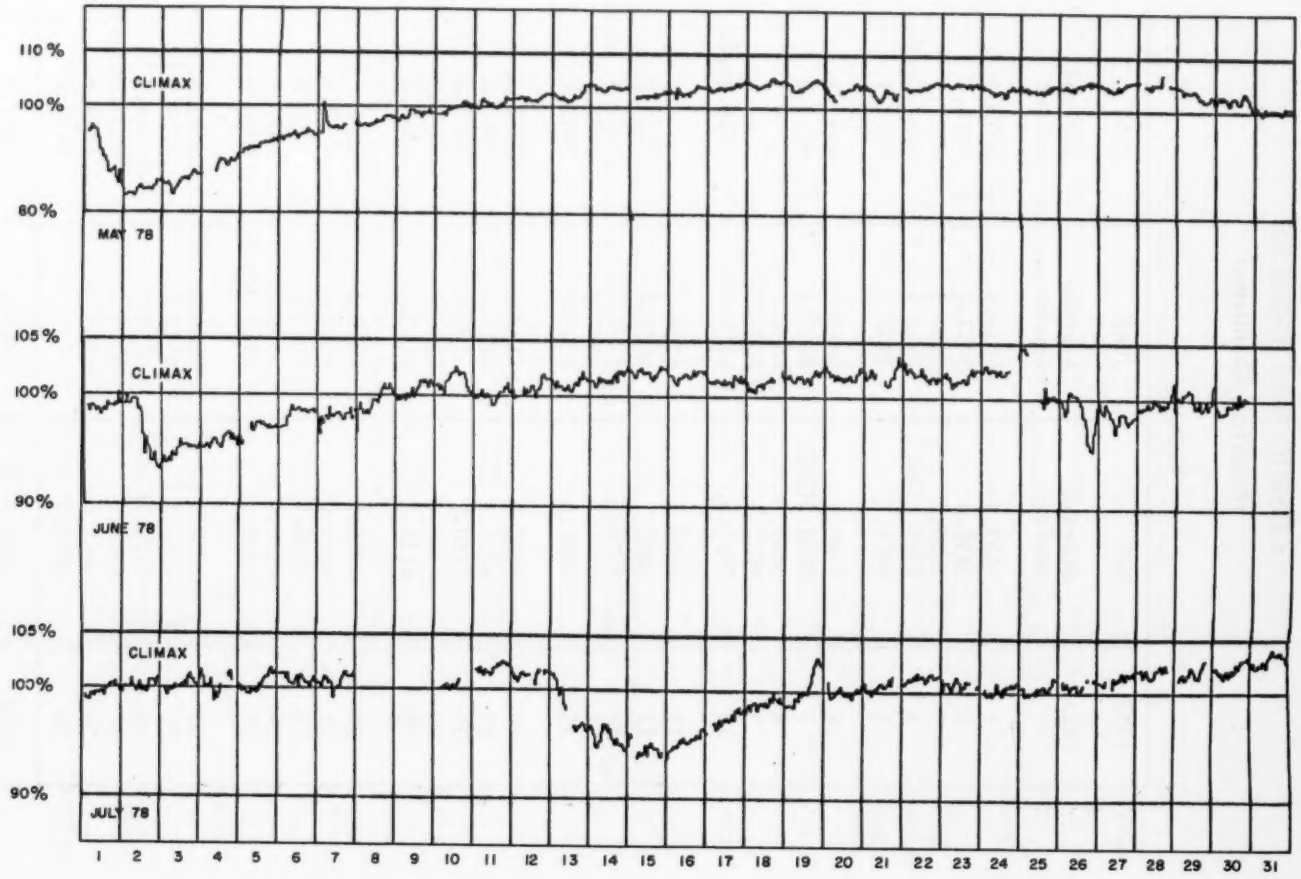
CLIMAX

1978 Date	MAY Average cts/hr	JUNE Average cts/hr	JULY Average cts/hr
1	3607.7	4011.9	4053.3
2	3359.9	3927.8	4072.1
3	3420.2	3847.9	4075.3
4	3555.6(36)	3882.4	4080.0(38)
5	3687.7	3932.1	4081.9
6	3765.2	3983.3	4099.3
7	3836.3(38)	3977.8	4094.5
8	3869.2	4034.1	--
9	3922.5	4073.8	--
10	3967.0	4109.6	4078.2(24)
11	4003.9	4059.3	4144.4
12	4047.7	4089.7	4120.9
13	4070.1	4101.0	4003.9
14	4121.2	4122.8	3885.5
15	4069.8	4143.9	3842.4
16	4102.3	4132.1	3877.4
17	4133.1	4112.4	3958.6
18	4160.9	4105.9	4019.4
19	4146.7	4130.3	4077.9
20	4115.8	4137.0	4063.6
21	4093.2	4142.1	4086.7
22	4144.0	4140.7	4118.5
23	4160.5	4133.0	4096.5
24	4127.5	4162.0	4077.8
25	4132.7	4110.2(34)	4080.8
26	4159.2	4004.8	4095.8
27	4158.7	3992.4	4119.0
28	4173.7(38)	4038.7	4146.3
29	4102.5	4055.8	4142.2(36)
30	4062.6	4035.4	4159.8
31	3991.9		4193.1
MEAN	3976.4	4057.7	4067.1

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

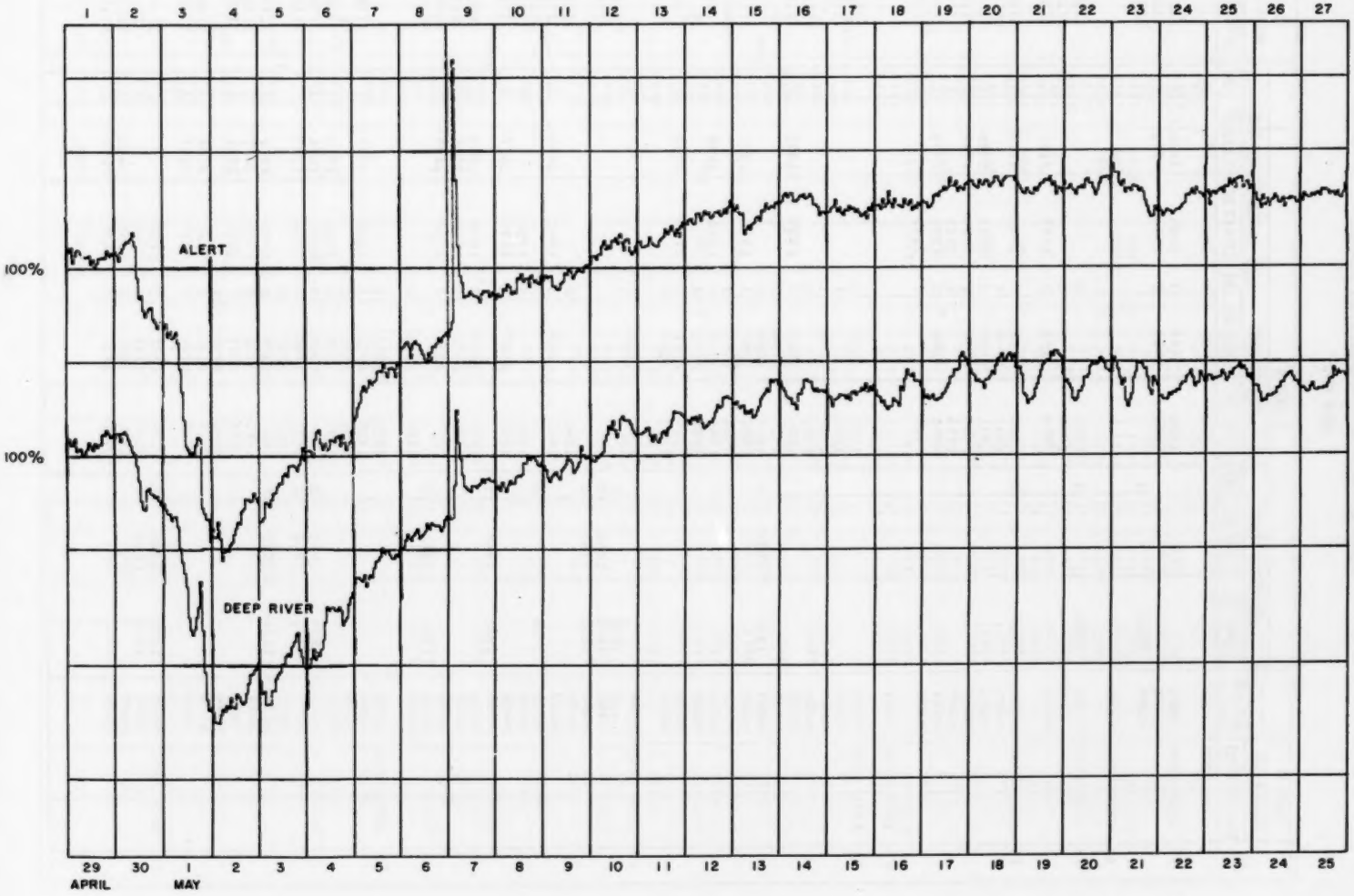
Thule, Alert, Calgary, Sulphur Mountain, Kiel and Climax Scaling Factors = 100.
Deep River Scaling Factor = 300.

COSMIC RAY INDICES
(Neutron Monitors)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1979 (April-May 1978)



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SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1978

JUL 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	1215	2255	HARV				1855	1858	3	1856	1858	3	IIIGG
02	1215	2245	HARV				1404	1408	3	1404	1408	3	IIIGG
			HARV				1458	1501	2	1458	1501	2	IIIGG
			HARV	2149		1							IIIG
03	1215	2310	HARV										
05	1517	2245	HARV	1531		1	1531		3				IIIG
			HARV				1556		1				IIIB
			HARV				2059	2101	2	2059	2101	2	IIIG
06	1230	2245	HARV	1512		3	1512	1513	3	1512	1513	3	IIIG,V
			HARV				1530	1545	3				UNCL,H
			HARV				1531	1535	3	1531	1535	3	IIIGG,V
			HARV				1539	1542	2	1539	1542	2	IIIGG
			HARV				2004		2	2004		3	IIIB
			HARV				2058	2059	3	2058	2059	3	IIIG,V
			HARV				2110		2	2110		3	IIIG
07	1230	2240	HARV										
08	1230	2245	HARV				1449	1450	2				IIIG
			HARV				1653		2				IIIG
			HARV				1747	1859	1				I
			HARV				1753		2				IIIG
			HARV				1835	1902	3	1835	1902	3	IIIN
			HARV				1920	1954	1				IN
			HARV	1950	2001	2	1950	2001	2				IVN
			HARV				1954	1957	3	1954	1957		IIIGG,V
			HARV				1954	1957	3				UNCL
			HARV				1958	2000	3	1958	2000		IIIGG
			HARV				2005	2138	2				IC
			HARV				2100	2101	3	2100	2101	3	IIIG
			HARV				2202	2210	1				I
09	1230	2245	HARV				1231	1832	1			1	I
			HARV	1232		2							IIIG
			HARV	1239	1246	2							IIIGG
			HARV	1251	1256	2							I
			HARV				1645		2				IIIG
			HARV				1648	1649	3	1648	1649	3	IIIGG,V
			HARV	1704		3							IIIGG
			HARV				1756		3	1756		3	IIIG,V
			HARV				1809	1827	3	1809	1827	3	IIIS
			HARV	1822	1849	3							IVN
			HARV				1832	1849	3	1832	1849	3	UNCL
			HARV				1832	2000	3	1832	2000	3	IC,IV
			HARV				1832	1839	3	1832	1839	3	IIIGG,V
			HARV	1903	1911	3							IIIGG
			HARV				2000	2013	1				I
10	1230	2245	HARV				1230	1530	1				I
			HARV				1305	1530	1	1230	1530	1	IIIN
			HARV				1530	2040	2				IC
			HARV				1530	1918	3	1530	1918	3	IIIN
			HARV	1654	1655	3	1654	1655	3	1654	1655	3	IIIGG
			HARV	1730	1740	3	1730	1740	3	1730	1738		IIIGG,V
			HARV				1740	1747	2				II
			HARV	1820	1821	2	1820	1822	3	1820	1822	3	IIIG,V
			HARV				1918	2235	2	1918	2235	2	IIIN
			HARV				2016	2021	3	2016	2021	3	IIIGG
			HARV				2040	2245	1				I
			HARV				2100	2103	2	2100	2103	2	IIIGG
			HARV				2225	2247	3	2225	2247	3	IIIGG
11	1230	2245	HARV	1238	1240	3	1239	1240	2	1239		2	IIIGG,V
			HARV	1246	1248	3	1246	1248	2	1247		2	IIIGG,V
			HARV				1351	1402	3	1351	1402	2	IIIN
			HARV				1416	2245	1	1416	2245	2	IIIN

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1978

JUL 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
11			HARV				1423	2245	1				IN
			HARV				1443	1444	2	1443	1444	2	IIIG
			HARV				1522	1530	3	1522	1530	3	IIIGG
			HARV				1540	1543	3	1540	1543	3	IIIG
			HARV	1611	1613	3	1611	1614	3	1611	1614	3	IIIGG,V
			HARV	1618	1629	2	1615	1631	3	1615	1631	3	IIIGG,V
			HARV	1659		3	1659	1701	3	1659	1701	3	IIIG,V
			HARV				1718	1735	3	1718	1735	3	IIIN
			HARV				1753	1804	3	1753	1804	3	IIIN
			HARV				1816	1820	3	1816	1820	3	IIIGG
			HARV				1824	1825	3	1824	1825	3	IIIGG
			HARV	1841	1845	3	1835	1850	3	1835	1850	3	IIIN
			HARV				1858	1859	3	1858	1859	3	IIIG
			HARV	1906	1907	3	1906	1907	3	1906	1907	3	IIIGG
			HARV				1936	1938	3	1936	1938	3	IIIG
			HARV				1948		2	1948		3	IIIG
			HARV	2006	2007	3	2000	2007	3	2000	2007	3	IIIG
			HARV				2015	2028	3	2015	2028	3	IIIN
			HARV	2032	2034	2	2031	2034	3	2031	2034	3	IIIGG,V
			HARV				2048	2058	3	2048	2058	3	IIIN
			HARV				2112	2238	3	2112	2238	3	IIIN
12	1230	2245	HARV				1232	1850	1				IN
			HARV				1238	1241	2	1238	1241	2	IIIGG
			HARV				1254	1320	2	1254	1320	2	IIIN
			HARV				1328	1338	1				IIIN
			HARV				1340	1355	3	1340	1355	3	IIIN
			HARV				1414		2	1414		2	IIIG
			HARV				1444	1554	3	1444	1554	3	IIIN
			HARV	1601	1600	3	1556	1607	3	1556	1607	3	IIIGG,V
			HARV				1621	1741	3	1621	1741	3	IIIN
			HARV	1759	1801	3	1759	1803	3	1759	1803	3	IIIGG,V
			HARV				1806	1939	3	1806	1939	3	IIIN
			HARV				1850	2055	2				IC
			HARV				2004	2007	3	2004	2007	3	IIIGG
			HARV				2032	2055	3	2032	2055	3	IIIN
			HARV				2050	2245	1				IN
			HARV				2116	2119	3	2116	2119	3	IIIGG,V
			HARV				2127	2134	3	2127	2134	3	IIIN
			HARV				2144	2229	2	2144		2	IIIN
13	1230	2245	HARV				1630		3	1630		3	IIIB
			HARV				1723		3	1723		3	IIIB
14	1230	2245	HARV	1332		3	1332		3				IIIB,RS
			HARV				1535	1536	3	1535	1536	3	IIIG,V
			HARV				1559		2				IIIB
			HARV				1729		3	1729		3	IIIG
			HARV	1733	1734	2	1731	1735	3	1731	1735	3	IIIGG,V
			HARV				1737	1746	2	1737	1746	2	II
			HARV				1800		2				IIIG
			HARV				1919	1920	2				IIIG
			HARV				2037		1				IIIB
15	1230	2245	HARV	1306		2	1306		1				IIIG
			HARV	1424	1426	3	1424	1426	3				IIIGG,V
			HARV	1446		2							IIIG
16	1230	2245	HARV				1951		1	1951		2	IIIG
			HARV				2005		3	2005		3	IIIB
17	1230	2255	HARV	1354	1355	2							IIIG
			HARV	1427	1428	2							IIIG
			HARV				1719		1				IIIB
			HARV				1741		1	1741		2	IIIB
			HARV				1816		1	1816		1	IIIB
			HARV				1818		1				IIIG
			HARV				1905		1	1905		1	IIIG
			HARV				2027	2036	2	2027	2036	2	IIIN
18	1231	2245	HARV	1948	2001	2							IIIN

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1978

JUL 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
18			HARV				2010	2012	1				IIIN
			HARV				2017	2245	1				IN
			HARV	2017	2026	3	2017	2020	2				IV
			HARV				2122		1				U
19	1231	2245	HARV										
20	1231	2245	HARV	2127		2	2127		2				IIIG
21	1231	2310	HARV	1426		1							IIIG
22	1231	2300	HARV				1412	1443	1				IIIN,W
			HARV				1744		2				IIIG
23	1231	2245	HARV				1426	1427	3	1426	1427	3	IIIG
			HARV				1723	1725	2	1725		3	IIIG
			HARV				1823	1833	2	1823	1833	2	IIIN
			HARV				2023		2	2023		2	IIIB
24	1231	2245	HARV										
25	1231	2300	HARV										
26	1231	2245	HARV										
27	1231	2245	HARV										
28	1231	2245	HARV										
29	1231	2245	HARV				1543	1546	2	1543	1546	2	UNCL
30	1231	2255	HARV										
31	1245	2255	HARV										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1978

AUG 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	1245	2250	HARV				1913		3	1913		3	IIIG
02	1245	2245	HARV				2034	2035	3	2034	2035	3	IIIG
03	1245	2245	HARV										
04	1245	2245	HARV	1624	1628	2							IIIGG
			HARV				1935		2	1935		2	IIIG
05	1245	2245	HARV	1356		1							IIIB
06	1245	2240	HARV										
07	1245	2245	HARV				1547		2	1547		2	IIIG
			HARV	1745	1746	1							IIIG
			HARV	1755	1756	1	1755	1756	1				IIIG
			HARV	1758	1759	1							IIIG
			HARV				1759	1807	2	1806	1807	2	II
			HARV	2214		3							
08	1245	2245	HARV										
09	1245	2210	HARV				1657		3	1657		3	IIIG
10	1245	2245	HARV				1323		1				IIIB
			HARV				1515		1	1515		2	IIIB
			HARV				1631	1632	1	1631	1632	1	IIIG
			HARV				1757	1758	2	1757	1758	2	IIIG
			HARV				1809		3	1809		3	IIIG
			HARV				1905	1906	2				IIIG
			HARV				1945	1948	2				IIIG
			HARV				2044		1				IIIG
			HARV				2138		2				IIIG
11	1245	2245	HARV	2024	2025	2							IIIG
12	1245	2245	HARV										
13	1245	1911	HARV				1703	1706	2	1703	1706	2	IIIG
14	1300	2245	HARV										
15	1250	2245	HARV	1328		2							IIIG
16	1245	2245	HARV										
17	1255	2245	HARV				1438	1439	1				IIIG
			HARV				1525		1				UNCL
			HARV				1648		1				UNCL
			HARV				2116		2				UNCL
18	1255	2245	HARV										
19	1440	2245	HARV										
20	1555	2245	HARV										
21	1300	2245	HARV										
22	1300	2245	HARV				1456	1457	1	1456	1457	1	IIIG
23	1300	2245	HARV										
24	1300	2245	HARV										
25	1300	2245	HARV				1543	1544	2	1544		1	IIIG
26	1300	2245	HARV										
27	1300	2250	HARV				1605		2	1605		2	IIIB

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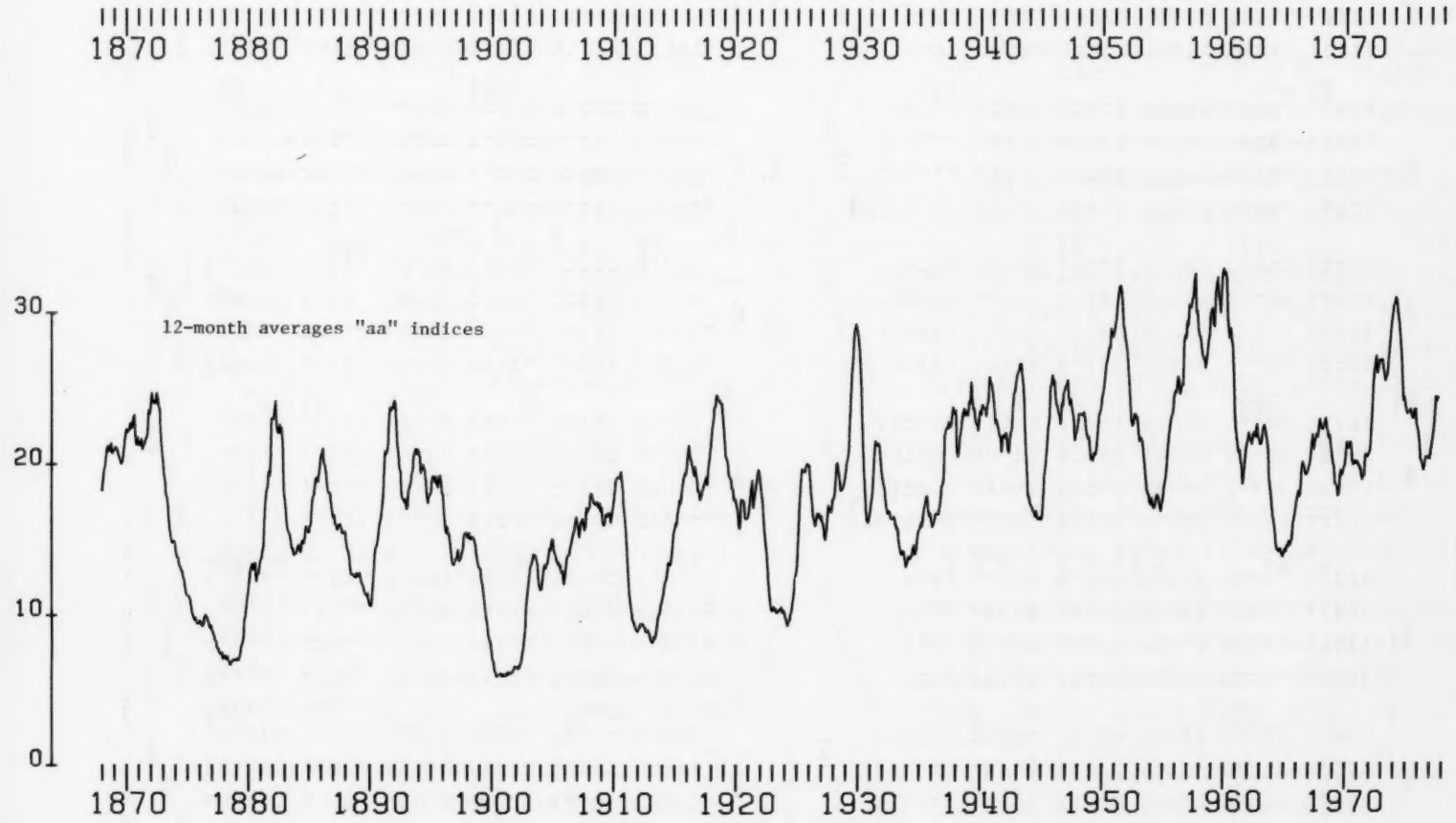
SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1978

AUG 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
27			HARV				1817	1818	2	1817	1818	3	IIIG
			HARV				1945	1947	2	1945	1947	3	IIIG
28	1300	2240	HARV										
29	1300	2245	HARV				1412		1				UNCL
			HARV				1558		1				IIIBW
30	1300	2245	HARV	2059	2100	2	2059	2100	2				IIIG
31	1300	2245	HARV				2016	2129	1	2016	2129	1	IIIN,W
			HARV				2140	2141	2	2140	2141	2	IIIG



The above graph is computed from a series of points based on yearly averages of "aa" indices. The ordinate of each point (one point per month) is a twelve month average such that the points plotted at the marked year intervals are in each case averages for January to December of that year. The graph begins with the average for 1868 and ends with the average for 1977. This graph was provided by Dr. P. N. Mayaud of the Institut de Physique du Globe, Paris, France, who also provides the daily values of "aa" on a monthly basis.

77
Misc
1968-1977

"aa" INDICES CORRECTED DATA FOR 1968-1977

1968

	JAN.				FEB.				MAR.				APR.				MAY				JUNE			
	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M
1	36	32	39	29	18	14	12	20	18	20	18	20	45	34	38	41	21	22	9	35	31	20	16	36
2	42	69	57	55	33	32	26	39	21	23	21	24	25	23	22	27	24	22	33	13	38	21	25	34
3	16	11	18	10	26	27	26	28	27	28	15	41	24	19	23	21	21	12	22	11	36	22	24	34
4	16	9	9	16QKK	23	30	42	11	34	25	22	38	16	13	18	12	12	6	11	7QCC	18	15	15	18
5	19	22	12	29	19	14	9	24 K	28	29	28	29	50	40	9	81	8	4	6	7QCC	16	5	9	19QCC
6	37	21	26	32	6	2	5	3QCK	17	11	12	16	54	57	65	47	8	5	5	8QC	12	7	7	12QCC
7	18	12	19	11	10	6	3	14QCK	10	10	10	10QCK	16	21	24	13	66	76	82	61	18	21	16	23
8	13	11	11	12QKC	29	28	29	29	11	6	8	10QCC	6	6	8	4QCC	15	8	13	10 C	29	12	14	29
9	5	7	4	8QCK	28	30	29	29	10	5	7	8QCK	5	4	3	6QCC	36	31	30	38	22	11	16	17
10	10	16	17	10QCC	60	56	25	91	25	24	22	27	18	10	11	17 K	21	12	15	18	50	46	50	47
11	26	21	8	40	60	81	84	58	16	13	20	10	22	15	17	21	30	24	31	24	119	83	123	79
12	28	26	21	33	23	19	24	18	18	13	13	19 K	22	15	12	26	45	27	47	26	46	47	50	46
13	20	13	21	13	28	28	22	34	10	7	11	6QC	42	27	29	40	29	19	27	22	50	44	48	46
14	24	14	16	23	10	13	11	12QC	45	28	27	47	40	43	41	42	25	15	23	18	38	37	37	39
15	21	16	10	27	51	37	28	60	47	37	39	45	23	25	19	29	20	12	18	14	20	9	11	18
16	24	23	14	34	24	27	21	30	42	29	28	43	29	20	24	26	21	18	19	20	27	18	12	34
17	25	25	24	27	41	23	20	44	23	16	22	18	26	20	20	26	29	22	11	41	30	30	46	14
18	20	21	27	14	42	38	33	47	19	15	19	16	18	17	20	16	36	17	13	40	24	16	16	28
19	26	22	16	33	21	11	26	9	20	22	25	17	5	5	7	4QCC	26	18	12	33	28	30	29	29
20	24	25	30	19	50	70	70	50	35	26	35	26	5	4	5	4QCC	36	33	39	30	14	7	10	11 C
21	13	15	17	12	45	30	38	37	16	11	13	14	10	7	7	11QCC	42	27	23	46	9	4	5	8QCK
22	16	24	17	24	16	13	19	11	12	8	11	9QCC	20	17	19	19	32	17	29	21	25	21	23	23
23	23	14	14	23	10	5	5	11 CC	21	15	7	29	24	21	27	19	26	14	13	27	19	13	19	13
24	23	17	13	28	12	7	12	8 CC	43	34	31	46	21	8	18	13 K	31	20	29	22	5	2	3	4QCC
25	11	8	9	11QC	10	5	6	9QCC	35	39	38	36	15	9	5	19 K	14	8	8	14 CK	12	4	4	12QCK
26	25	30	13	43	10	4	4	9QCC	26	24	23	28	42	29	21	50	8	3	6	5QCC	30	17	24	24
27	20	18	18	21	21	13	9	26	26	24	24	26	32	33	39	27	10	4	5	9QCC	24	19	18	25
28	34	17	16	36	51	45	21	75	26	19	23	23	26	29	36	19	19	5	9	15 CK	10	6	9	13 C
29	27	17	21	24	29	24	33	21	25	22	19	28	26	29	27	28	22	16	16	22	26	15	9	33
30	23	16	24	16					48	44	43	50	17	7	13	11 C	21	14	17	19	26	18	26	21
31	15	27	30	12					32	30	20	43					23	13	17	19				
	22.0				27.8				25.3				24.1				25.1				26.8			
		20.1				25.2				21.1				20.2				17.5				20.7		
			21.1				26.5				23.3				22.3				21.4				24.9	

	JULY				AUG.				SEP.				OCT.				NOV.				DEC.			
	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M
1	25	13	20	18	11	3	7	8QCC	20	12	20	12	30	26	31	26	136	132	49	220	19	22	16	26
2	25	18	24	19	9	4	6	8QCK	23	23	20	26	57	57	68	46	81	86	92	75	12	18	12	19
3	31	26	41	16	28	18	26	21	40	23	24	40	40	47	78	8	50	41	44	47	37	27	28	30
4	23	15	23	16	13	7	15	5 C	25	24	29	21	7	5	5	7 CC	42	47	49	41	45	38	35	46
5	19	11	17	13	30	16	18	30	19	22	20	21	6	7	8	5QCK	15	8	9	15 C	36	29	37	30
6	16	6	14	8 CK	36	22	36	23	34	32	25	41	16	14	17	14	16	11	7	21	14	11	18	8 K
7	18	11	17	13 K	24	24	29	20	32	30	23	39	36	24	20	40	26	20	35	12	10	8	7	12QCK
8	13	9	12	10 CC	28	13	25	17	53	56	67	42	15	11	12	14 C	18	20	11	28	18	25	23	21
9	11	7	7	12QC	26	16	17	26	29	18	27	21	19	11	11	19	42	51	53	40	17	14	12	19
10	54	46	45	56	18	12	16	15	14	16	20	11	9	6	11	4 CK	28	25	20	34	25	30	42	13
11	22	14	19	17	15	7	15	7 CC	9	6	12	3 CC	5	10	7	8QC	21	23	25	19	17	14	9	22
12	21	5	12	14 C	13	6	9	10 CC	33	30	13	50	68	74	67	75	8	5	10	4QCK	14	16	21	11
13	37	21	11	48	25	10	5	30	62	42	47	58	47	34	46	34	14	10	10	14 CC	13	10	8	15 CC
14	38	28	39	27	47	34	41	39	45	45	45	46	29	21	24	27	8	9	6	11QCC	7	7	7	8QCC
15	21	10	16	15	38	37	39	36	52	39	43	48	11	9	10	11 C	5	10	11	4QCK	16	17	16	19
16	22	15	13	25	64	59	39	64	21	16	23	15	11	15	9	18 K	29	36	17	48	23	20	22	21
17	16	7	9	14 C	50	54	55	50	12	8	13	8 CC	19	19	19	20	32	43	27	49	11	8	13	7QCK
18	24	14	17	22	45	32	39	38	9	5	5	9QCK	15	14	21	8	34	30	41	24	16	15	13	18
19	19	13	13	19	19	17	22	14	18	18	27	10	33	20	12	42	13	14	19	9	24	31	28	26
20	15	4	12	7QCK	12	13	11	15 CC	13	10	14	10 KK	15	12	19	9	26	39	27	39	8	7	11	5QC
21	20	7	8	20	8	7	9	7 CC	21	18	17	22	5	5	7	4QCC	15	13	10	18	27	35	25	37
22	34	24	32	27	12	7	5	14 CC	24	15	14	26	4	3	3	4QCC	13	9	8	14 C	28	20	25	24
23	27	17	25	19	26	21	17	31	33	29	29	34	7	7	4	10QCC	11	12	17	7 KC	29	27	18	40
24	9	3	6	6QCK	40	32	46	26	9	4	4	9QCK	15	15	8	23 K	11	12	8	16 KK	16	13	13	19
25	18	7	9	17 KK	10	2	4	9 CK	6	4	4	6QCC	12	17	12	17	22	14	16	20	37	57	77	17
26	32	17	21	29	8	7	7	9 CC	10	7	9	9QCC	11	8	7	13 C	16	13	10	20	7	11	10	8QC
27	25	18	29	14	11	5	10	6 CC	6	4	5	5QCC	15	14	18	12 K	20	15	19	16	28	31	42	16
28	18	9	10	18 K	7	5	7	6QCC	19	13	14	18 C	12	13	9	17 K	18	14	11	22	15	11	9	16 C
29	11	5	9	8QCC	5	3	3	5QCC	20	14	16	18	68	57	38	88	10	11	12	10QCK	22	17	11	29
30	18	7	9	16 CC	6	2	3	5QCK	14	10	4	21 K	27	27	19	35	6	4	2	7QCC	15	12	12	15 C
31	14	7	14	7QCC	27	31	21	38					126	140	98	169					24	14	15	24
	22.4				23.0				24.1				25.5				26.3				20.5			
		13.3				17.0				19.8				24.0				25.8				19.9		
			18.0				20.1				22.0				24.8				26.2				20.3	

ANNUAL MEAN N 24.58 S 20.40 M 22.58

JAN.

	N	S		M
1	17	19	18	19
2	8	11	9	10 CC
3	4	6	4	9QCC
4	5	13	7	11 CC
5	4	7	8	4 CC
6	2	4	4	2QCK
7	15	26	15	27
8	16	19	18	17
9	9	12	13	9 CC
10	6	7	6	8QCC
11	11	12	8	16 CK
12	11	23	18	15
13	4	9	8	6QCK
14	18	20	17	22
15	30	20	24	28
16	21	18	16	23
17	38	36	32	41
18	41	44	46	39
19	27	26	29	25
20	20	22	17	25
21	13	13	15	11 C
22	7	7	8	6 CC
23	10	12	5	17 KC
24	25	22	6	41
25	50	59	53	57
26	36	51	50	37
27	23	25	18	31
28	11	9	12	9 C
29	6	6	7	5QCC
30	13	11	19	6 KK
31	15	12	11	18 K

16.7
18.7
17.8

FEB.

	N	S		M
1	6	10	8	8QCC
2	88	75	8	155
3	81	74	62	94
4	24	26	22	29
5	20	17	24	14
6	26	24	39	12
7	22	23	20	25
8	24	15	22	18
9	7	8	8	8QCC
10	26	25	14	37
11	81	86	61	106
12	20	12	11	22
13	19	18	17	21
14	21	18	19	21
15	36	27	31	33
16	23	18	22	20
17	9	7	9	8QCK
18	4	4	2	5QCC
19	12	17	11	19 K
20	17	18	19	17
21	14	10	17	8 KK
22	9	9	4	13QCC
23	21	16	18	20
24	13	12	15	11 C
25	15	10	19	7 K
26	24	34	37	21
27	45	54	37	62
28	30	33	30	33

26.4
25.0
25.8

MAR.

	N	S		M
1	27	19	12	34
2	18	15	22	11
3	4	6	4	7QCC
4	17	8	2	22QKK
5	23	20	23	21
6	36	29	25	40
7	36	30	24	43
8	26	25	29	23
9	27	19	17	30
10	15	12	20	8Q
11	36	43	21	58
12	50	48	67	32
13	20	11	14	18
14	17	14	9	23
15	32	30	30	32
16	28	29	35	22
17	64	56	58	62
18	23	16	23	17
19	29	21	13	37
20	32	32	34	31
21	21	21	23	19
22	19	26	22	22
23	63	53	12	105
24	63	79	119	23
25	30	38	34	35
26	20	18	17	22
27	14	7	13	9QC
28	12	12	11	14QCC
29	25	18	12	32
30	29	22	21	30
31	33	21	22	32

28.7
25.8
27.3

APR.

	N	S		M
1	34	36	17	93
2	28	28	15	41
3	30	21	23	29
4	22	21	20	24
5	20	21	22	19
6	23	22	14	31
7	36	24	32	28
8	16	11	13	14 K
9	22	24	15	32
10	14	18	12	20Q
11	12	16	17	11
12	22	16	8	32
13	35	42	32	45
14	23	22	21	24
15	20	25	27	19
16	36	32	31	37
17	31	32	27	36
18	32	20	36	16
19	12	7	7	12QCK
20	18	9	11	16
21	16	9	16	10QK
22	21	21	27	15
23	10	10	9	11QCK
24	18	11	16	13
25	20	15	22	14
26	14	10	9	16QC
27	26	18	26	19
28	66	64	79	51
29	23	24	16	31
30	48	34	43	40

24.9
22.1
23.6

MAY

	N	S		M
1	15	16	17	15
2	50	31	14	67
3	24	32	29	27
4	19	16	15	21
5	23	21	18	26
6	16	15	15	17
7	11	10	17	4QKK
8	15	8	6	18 KK
9	28	14	19	24
10	22	15	20	18
11	11	6	9	8QCC
12	17	8	4	21 K
13	56	56	53	58
14	69	49	40	79
15	130	132	133	128
16	54	35	67	22
17	24	20	23	22
18	40	28	30	38
19	26	13	18	22
20	18	9	14	13 C
21	28	24	29	23
22	24	18	18	25
23	24	14	16	23
24	20	12	14	19
25	16	7	13	11 CK
26	10	7	10	7QCC
27	7	5	6	7QCC
28	18	12	14	16 K
29	11	8	7	12QCK
30	24	19	17	26
31	26	22	19	29

28.2
22.1
25.2

JUNE

	N	S		M
1	14	7	9	11 C
2	11	13	12	12 CC
3	16	7	11	15 CC
4	10	10	10	11 CC
5	14	7	13	8 CC
6	12	4	4	12QCC
7	18	10	14	14
8	32	17	26	24
9	26	17	13	31
10	22	13	20	19
11	16	11	18	12
12	34	19	30	24
13	40	21	38	24
14	13	5	7	12QCK
15	15	7	10	12 C
16	20	22	27	15
17	15	10	9	15 KK
18	6	4	6	4QCC
19	14	10	10	13 CC
20	25	17	21	44
21	23	13	10	26
22	14	17	15	16
23	14	10	10	14 CK
24	14	4	8	9QCC
25	10	4	6	9QCC
26	10	6	6	11 C

19.9
13.2
16.7

JULY

	N	S		M
1	40	30	35	35
2	12	11	18	5 K
3	7	4	4	8 CC
4	6	3	4	4QCC
5	7	4	5	6QCC
6	14	6	4	17 KC
7	19	8	10	17 K
8	17	6	6	17 CK
9	17	12	14	15
10	15	12	8	19 KK
11	15	7	6	16 C
12	27	12	22	17
13	27	21	26	23
14	32	24	33	23
15	11	9	11	9 C
16	25	14	19	21
17	10	7	8	10 CK
18	8	9	5	12 CC
19	4	3	4	3QCC
20	10	6	8	9QCC
21	15	11	6	21 KK
22	22	14	13	23
23	16	9	5	20 K
24	12	5	8	10 CK
25	8	4	6	6 CK
26	45	30	20	56
27	57	49	78	28
28	10	6	10	7 CK
29	7	3	4	6QCC
30	29	14	8	35
31	19	7	13	13 C

18.2
11.5
15.0

AUG.

	N	S		M
1	6	8	8	6QCC
2	15	4	4	15 CC
3	22	22	13	31
4	29	23	30	22
5	18	17	20	15
6	14	6	14	6 CK
7	17	12	14	15 C
8	22	14	15	22
9	23	16	22	18
10	14	13	18	10 K
11	10	5	4	11QC
12	34	36	41	30
13	15	15	18	13
14	12	12	13	12 CC
15	15	6	5	16 CC
16	9	7	5	11 CK
17	16	9	17	8 KK
18	16	11	8	20 K
19	25	24	18	31
20	13	20	20	12
21	16	10	11	16 CC
22	12	6	5	13 C
23	22	21	24	19
24	15	15	15	16
25	5	5	7	3QCK
26	27	24	24	28
27	32	37	49	20
28	15	9	11	13 CK
29	9	7	7	10QCC
30	7	8	7	9QCC
31	12	8	11	9 CC

16.8
13.8
15.3

SEP.

	N	S		M
1	5	4	6	4QCC
2	4	3	4	3QCC
3	11	8	8	12 CC
4	12	7	10	10 CC
5	32	30	6	57
6	33	33	44	22
7	23	21	16	29
8	29	30	43	16
9	21	26	15	32
10	21	11	14	18
11	17	17	18	17
12	11	8	14	5 CC
13	5	5	5	5QCC
14	22	18	7	34
15	31	29	33	28
16	15	14	18	11
17	24	25	13	36
18	36	30	20	47
19	17	10	18	10
20	16	23	18	21
21	11	7	9	9 CK
22	8	6	10	4QCC
23	19	26	8	37
24	11	12	15	9 C
25	22	19	23	19
26	7	9	10	6QCC
27	13	9	4	18 K
28	69	74	64	79
29	85	93	67	111
30	85	105	133	57

23.8
23.8
23.8

OCT.

	N	S		M
1	36	32	34	34
2	50	44	55	40
3	33	29	27	35
4	24	16	18	23
5	16	14	15	16
6	29	23	21	31
7	12	12	15	9 C
8	9	10	8	12QCC
9	31	11	7	34
10	45	37	34	48
11	22	17	19	21
12	18	17	19	17
13	10	10	12	8 KK
14	8	7	5	10QCC
15	7	6	7	6QCC
16	15	10	4	21 KK
17	13	7	7	14 K
18	11	13	15	10 C
19	21	26	29	19
20	10	5	6	9 CK
21	19	22	18	24
22	16	22	16	22
23	11	8	7	12 C
24	24	29	32	21
25	13	11	14	10 K
26	8	12	11	10QCC
27	18	14	10	23
28	13	14	12	15
29	8	5	8	6 CC
30	3	3	4	2QCC
31	9	14	12	12 CC

18.2
16.1
17.2

NOV.

	N	S		M
1	5	3	3	5QCC
2	26	17	15	29
3	27	25	22	31
4	8	10	12	7 C
5	13	15	12	17 C
6	7	7	6	8QCK
7	23	20	19	25
8	22	29	14	37
9	55	67	70	53
10	58	52	54	57
11	23	28	18	34
12	14	11	15	10 K
13	11	12	11	12 CC
14	5	4	5	4QCC
15	4	2	3	3QCC
16	6	8	5	9 CC
17	6	7	5	9 CC
18	10	15	11	15 CC
19	13	13	7	20 KK
20	8	7	10	6 CC
21	6	11	8	10QCK
22	16	19	21	14 K
23	10	13	8	16 CC
24	19	14	11	23
25	14	18	13	19
26	24	17	11	31
27	40	42	39	43
28	18	17	21	15
29	26	25	17	35
30	37	33	41	29

18.5
18.8
18.7

DEC.

	N	S		M
1	14	12	12	12 C
2	7	6	4	9 CC
3	10	6	3	15 KK
4	13	16	14	16
5	37	27	23	41
6	33	25	31	26
7	15	10	10	13 C
8	16	10	11	15 C
9	21	19	23	18
10	16	11	8	20 K
11	19	25	27	17
12	10	10	13	8 CC
13	6	6	6	7QCC
14	9	11	8	14 CC
15	13	12	11	14 C
16	25	27	29	24
17	9	6	8	8 CK
18	8	6	8	5 CC
19	7	8	7	9 CC
20	7	7	7	6QCC
21	5	5	6	4QCC
22	14	23	18	19
23	26	23	17	33
24	17	17	20	15
25	18	22	20	21
26	18	18	14	23
27	14	14	21	8
28	8	8	5	11 CC
29	8	8	11	6 CC
30	6	6	6	6QCC
31	5	9	8	6QCC

13.9
13.5
13.6

ANNUAL MEAN N 21.18 S 18.69 M 20.03

1970

	JAN.				FEB.				MAR.				APR.				MAY				JUNE			
	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M
1	18	19	11	27	16	13	12	18	31	42	46	27	10	8	9	9 K	22	18	14	26	41	34	38	38
2	43	44	39	48	32	25	23	34	22	21	27	16	13	13	10	16 C	19	14	18	16	23	24	27	20
3	22	16	26	12	15	14	22	7	35	25	18	43	19	23	25	17	25	14	11	29	23	17	18	23
4	7	8	6	10QCC	26	25	17	34	32	30	24	39	16	18	22	12	16	10	14	12 C	22	16	15	23
5	12	13	11	15 KK	19	12	17	15	27	30	21	36	21	17	17	22	20	18	15	23	11	8	13	6 CK
6	10	14	14	12 KK	6	5	7	4 CC	46	41	41	46	33	28	37	24	14	6	7	13 C	7	5	9	3QCC
7	10	11	6	16 KK	5	2	3	4QCC	54	48	32	70	17	20	29	8	17	9	12	14 CC	19	10	6	24
8	13	12	7	19 K	5	5	4	7QCC	183	161	58	286	23	17	28	13	11	4	4	11QCC	23	26	35	15
9	16	21	24	16	5	4	5	4 CC	63	57	54	66	26	23	23	27	8	4	5	8QCC	12	6	8	11 CC
10	14	6	14	6 KK	13	14	8	20 K	13	14	15	13	10	4	5	9QC	2	2	2	2QCC	11	11	10	13 CC
11	8	7	8	7QCC	6	9	9	5QCK	5	4	2	6 CC	13	12	17	9 CC	6	3	2	7QCK	13	7	5	15QKC
12	15	13	13	15 C	8	6	5	9 CC	8	13	15	7 CK	11	12	10	13 CC	31	25	21	36	14	7	10	12QCK
13	12	15	12	16Q C	10	16	14	13 K	16	17	15	19 K	6	8	8	7QCC	18	7	14	11 C	16	18	14	22
14	6	8	7	7 CC	21	18	25	14	6	4	7	4 CK	7	4	6	5QCC	29	20	19	31	17	9	11	15 K
15	15	16	17	15	16	13	17	13 K	14	11	14	11 CC	9	10	7	13QCK	20	12	24	9	25	26	26	25
16	32	27	23	38	9	10	9	10 CC	5	6	6	5QCC	27	15	19	24	14	11	9	16 C	23	13	19	18
17	18	10	20	8	20	20	11	29	10	11	6	15 CC	43	32	39	36	25	20	32	13	24	22	15	31
18	10	14	13	11 CC	18	15	17	17	12	14	12	15 KC	28	35	24	40	12	9	15	6 CC	40	54	36	58
19	13	10	6	17 KK	9	7	10	7 CC	11	9	9	11 CC	30	35	46	19	14	11	14	12 C	19	13	13	20
20	17	17	12	23	5	7	5	7 CC	11	8	4	15 CC	40	27	20	48	26	27	23	29	29	28	22	36
21	11	15	12	15 K	5	5	5	5QCC	5	4	4	5QCC	92	103	53	142	22	16	15	23	34	20	34	21
22	12	8	11	9 CC	4	3	2	5QCC	4	6	7	4QCC	45	34	70	9	15	20	16	19	9	6	5	10QCK
23	14	7	10	12 CC	7	7	4	11 CC	9	13	13	9 CC	25	25	20	31	15	10	8	17 C	8	4	4	7QCC
24	16	11	14	13 CC	19	22	13	28	5	4	4	5QCC	31	30	24	37	18	11	12	17	14	7	5	16 CC
25	5	4	5	5QCC	7	10	12	5 C	6	4	4	6QCC	28	32	34	26	15	16	23	9 K	15	10	12	13 C
26	5	4	4	5QCC	17	15	11	21 K	11	7	10	8 CK	23	16	14	26	5	4	3	6QCC	22	18	15	26
27	12	12	13	12 CC	18	14	11	22	24	25	21	28	20	17	24	14	26	26	13	39	51	46	52	45
28	13	8	5	16 KK	24	25	21	29	34	33	36	32	10	6	9	8QCC	56	52	51	56	16	12	20	10
29	11	20	20	12					28	32	22	38	17	9	9	18 C	29	17	31	15	11	7	6	12 CC
30	19	36	20	35					32	28	29	32	31	26	36	21	21	20	24	17	8	7	9	6 CC
31	14	11	17	9 K					70	76	81	65					12	9	9	13 C				
	14.5				13.1				26.9				24.2				18.8				20.1			
		14.1				12.2				25.8				21.9				14.3				16.4		
			14.4				12.7				26.4				23.1				16.6				18.3	

	JULY				AUG.				SEP.				OCT.				NOV.				DEC.			
	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M
1	24	20	18	27	8	8	9	8QC	32	38	34	36	20	16	14	23	4	4	4	4QCC	2	4	3	3QCC
2	19	22	30	12	14	10	16	8 CC	31	35	34	33	21	13	16	18	8	17	11	14 CC	12	13	4	21 KK
3	37	33	36	33	10	5	8	7QCC	22	25	15	33	30	20	19	32	21	17	14	25	7	10	11	7 CK
4	41	41	73	9	11	8	5	14QCC	24	23	24	24	36	36	48	25	15	12	14	13 C	11	12	9	15 C
5	26	30	29	27	7	3	5	4QCC	19	17	13	24	20	12	19	13	20	17	15	23	16	29	25	20
6	29	22	36	16	18	10	10	18 C	12	9	5	16QCK	13	11	12	13 CC	20	27	25	22	11	24	20	16
7	11	6	5	12QCK	35	15	13	37	14	10	7	18 KK	8	5	6	8QCC	71	69	97	43	17	15	10	23
8	16	12	8	20	34	44	36	43	15	23	11	27	5	3	4	4QCC	15	11	16	11 C	25	30	36	19
9	79	105	74	111	37	31	48	20	12	12	8	16QC	4	4	4	4QCC	15	17	15	18	10	10	14	7 CK
10	57	51	45	63	18	14	16	17	14	8	19	4 KK	16	15	10	21	30	30	27	33	7	10	8	10QCC
11	23	17	19	22	19	15	16	19	4	4	3	5QCC	20	30	32	18	38	28	31	36	2	6	5	4QCC
12	29	21	22	29	17	15	20	12	9	9	14	4QCK	23	25	41	8	16	19	20	16	7	7	7	9 CC
13	24	12	18	18	13	14	9	19 C	37	35	26	46	13	21	17	18	15	18	15	18	11	9	9	12 C
14	23	16	18	22	11	2	5	8 CC	31	44	34	41	15	11	16	10 CK	16	14	15	16	62	105	111	56
15	12	7	10	9QC	17	9	8	19 KK	19	18	23	15	7	7	8	6QCK	8	10	7	11QCC	23	18	26	15
16	17	15	17	15 K	33	18	10	41	15	17	19	13	45	54	23	77	12	17	10	20	6	8	8	7 CC
17	20	13	6	28	144	110	164	89	14	17	18	14	62	37	29	70	12	16	20	8	6	6	7	5QCC
18	12	6	9	9QCK	47	49	43	53	21	18	20	20	52	41	64	29	31	37	12	56	6	7	2	10 KK
19	10	6	8	9QCC	26	19	24	21	31	33	30	34	21	15	21	16	22	30	48	5	21	24	20	25
20	16	8	7	18 K	7	8	8	7 CK	26	23	26	23	11	13	14	10 CC	7	8	7	8QC	13	21	25	10
21	48	44	31	62	10	4	9	6 CC	31	30	28	33	5	4	3	6QCC	32	56	41	48	8	8	10	7 CC
22	22	15	18	20	14	12	6	20 KK	24	17	20	22	34	37	18	53	28	34	36	26	10	12	10	13 CK
23	26	14	18	22	19	14	21	12	12	12	14	11 C	52	37	34	55	34	53	34	53	12	20	20	12
24	50	29	31	48	9	6	6	9QCC	16	11	15	12 CC	23	18	26	15	26	47	46	27	23	17	28	13
25	90	99	128	62	13	13	12	14 C	8	9	12	6 CC	14	13	11	16 KK	27	17	18	28	11	13	9	17 CC
26	27	28	36	20	28	36	29	35	14	13	14	14	7	8	10	5 CK	21	12	10	24	8	9	10	8 CC
27	30	24	22	33	21	22	16	27	38	30	29	39	13	10	9	14 C	19	21	15	25	13	22	14	22
28	9	4	6	8QC	25	25	14	36	14	10	17	8 K	31	35	27	39	16	16	12	21	36	34	20	49
29	52	71	72	52	19	14	22	12	10	13	12	12QK	28	25	16	38	4	6	5	5QCK	26	26	17	36
30	18	10	12	16	9	6	11	5 CK	19	23	27	15	16	14	22	9	3	6	4	4QCC	22	25	26	22
31	29	21	22	29	24	24	20	28					9	8	9	9 CC					7	11	9	9QC
	29.9				23.1				19.6				21.8				20.2				14.7			
		26.6				18.8				19.6				19.2				22.9				18.2		
			28.4				21.0				19.7				20.6				21.6				16.5	

ANNUAL MEAN N 20.58 S 19.17 M 19.95

JAN.

	N	S	M
1	14	12	15 11 C
2	33	26	29 30
3	68	52	48 72
4	27	29	32 25
5	19	18	17 21
6	10	11	12 9 CC
7	2	4	3 3QCC
8	2	3	3 2QCC
9	3	4	4 4QCC
10	10	13	8 16 KK
11	16	19	16 20
12	8	8	8 9QCK
13	10	22	15 17
14	16	12	14 15
15	22	15	22 16
16	16	12	17 12
17	14	17	15 17
18	28	40	21 48
19	30	30	18 43
20	42	56	61 37
21	20	17	22 16
22	19	12	17 14
23	14	14	17 12
24	23	18	14 28
25	17	21	26 13
26	4	4	4 4QC
27	53	81	56 79
28	66	54	39 81
29	25	46	53 19
30	44	46	48 43
31	33	28	29 33

22.9 / 24.1 / 23.5

FEB.

	N	S	M
1	28	35	36 27
2	20	13	13 20
3	7	9	10 7QCC
4	10	11	6 16QCC
5	9	7	11 5QCC
6	14	13	14 13 CC
7	14	13	16 12
8	21	15	16 20
9	19	29	25 23
10	21	17	10 29
11	12	11	9 15 C
12	15	12	11 16 CC
13	8	6	11 4QCK
14	30	33	20 43
15	58	37	28 67
16	43	34	41 36
17	25	25	24 27
18	27	25	22 31
19	15	12	20 8
20	22	15	17 21
21	12	21	16 17
22	7	5	10 2QCK
23	29	27	10 46
24	23	13	9 28
25	69	49	29 89
26	42	37	48 31
27	22	15	16 22
28	10	7	13 4 CK

22.6 / 19.5 / 21.2

MAR.

	N	S	M
1	9	9	11 7 CC
2	8	12	10 11 CC
3	22	15	14 24
4	26	24	31 20
5	8	11	11 9 CK
6	10	5	6 10 CC
7	9	8	8 10 C
8	35	21	28 29
9	14	15	20 10
10	24	23	25 22
11	14	15	17 12
12	39	30	13 56
13	64	61	46 79
14	40	49	44 45
15	39	41	56 24
16	27	24	26 25
17	23	23	19 27
18	19	11	15 15
19	35	29	18 46
20	25	15	33 8
21	7	6	8 6QCC
22	7	4	4 6QCC
23	7	7	5 9QCK
24	28	25	25 30
25	23	26	33 16
26	29	29	33 24
27	16	18	17 17
28	5	4	5 4QCC
29	5	4	4 4QCC
30	19	11	5 24
31	51	42	37 56

22.2 / 19.8 / 21.1

APR.

	N	S	M
1	20	20	31 9
2	10	24	12 22
3	29	31	25 36
4	40	48	37 51
5	20	19	15 25
6	20	22	25 17
7	9	9	13 6 CC
8	12	12	10 15QC
9	66	81	58 89
10	41	37	37 41
11	36	49	44 41
12	17	19	16 21
13	13	18	15 16
14	69	42	11 101
15	46	35	46 36
16	30	23	27 26
17	11	12	15 9 C
18	23	15	15 24
19	14	14	20 9
20	10	7	10 8QCC
21	28	41	13 56
22	24	28	29 24
23	24	15	14 26
24	5	4	4 4QCK
25	3	4	4 3QCC
26	13	10	4 19QKK
27	15	14	18 12
28	29	35	26 39
29	17	18	19 17
30	13	17	20 10

23.7 / 24.1 / 23.9

MAY

	N	S	M
1	17	9	9 17 C
2	33	20	40 13
3	18	11	8 21
4	13	6	13 6 CK
5	18	13	6 25
6	57	52	44 65
7	56	49	58 47
8	23	31	26 27
9	24	19	19 25
10	24	16	22 19
11	10	8	11 8 CK
12	8	6	6 9QCC
13	10	6	7 9QCC
14	31	21	17 36
15	21	18	21 19
16	10	13	7 17 K
17	95	69	67 98
18	47	58	62 44
19	21	17	19 20
20	10	9	12 7 CK
21	12	7	11 9 C
22	28	18	24 23
23	16	12	7 22
24	15	11	12 14 C
25	19	20	20 20
26	4	2	4 3QCK
27	12	4	3 13QCC
28	15	6	10 12 C
29	33	35	32 37
30	8	4	8 4QC

23.3 / 18.6 / 21.1

JUNE

	N	S	M
1	35	41	25 51
2	54	49	50 53
3	46	37	51 34
4	22	17	19 21
5	14	6	11 9 C
6	12	11	16 8 CC
7	7	3	4 7QCC
8	17	10	17 10 C
9	9	10	8 12QCC
10	11	7	8 11 CC
11	12	11	12 11 CC
12	7	7	9 6QCC
13	16	20	4 32 K
14	9	10	8 11 C
15	12	9	12 9 CC
16	12	9	6 15 C
17	21	17	27 12
18	13	11	15 9 CC
19	6	3	4 4QCC
20	7	4	7 5QCC
21	12	5	6 12 CC
22	12	8	7 14 CK
23	16	18	20 14 K
24	13	6	5 15 C
25	43	33	25 52
26	21	27	37 11
27	10	9	8 10 CC
28	21	10	4 27
29	36	42	22 57
30	22	17	16 24

18.3 / 15.5 / 17.0

JULY

	N	S	M
1	26	17	22 22
2	26	27	27 26
3	16	10	9 17 C
4	18	12	11 19
5	20	10	13 17
6	20	10	16 15
7	8	5	7 6QCK
8	19	12	15 16 K
9	12	8	13 7 CC
10	7	4	4 7QCC
11	15	16	9 22 K
12	18	11	9 20
13	20	20	23 18
14	15	19	16 18
15	16	13	18 12
16	13	11	10 15 CC
17	12	4	11 6QCC
18	17	10	11 16 KK
19	21	10	18 13 K
20	11	7	5 12QCC
21	31	42	15 58
22	15	8	17 7 K
23	23	8	10 22 K
24	12	7	12 7 KK
25	8	4	4 9QCC
26	35	21	4 52
27	21	12	17 16
28	11	10	18 4 KK
29	16	13	6 24 K
30	15	18	19 14
31	21	21	16 26

17.4 / 12.9 / 15.2

AUG.

	N	S	M
1	13	11	9 15 C
2	32	33	48 18
3	11	6	5 12QCK
4	18	15	15 18
5	23	19	33 10
6	7	2	2 7QCC
7	12	5	5 13 CK
8	24	24	25 22
9	22	19	16 26
10	22	16	18 21
11	28	19	30 18
12	24	22	23 23
13	19	14	17 16
14	9	10	7 13QCK
15	14	7	4 16 CK
16	23	9	17 16
17	28	21	15 35
18	48	54	73 29
19	10	4	10 5 CK
20	7	5	3 10QCC
21	16	14	11 19
22	19	24	16 27
23	27	18	27 18
24	19	13	11 21
25	19	13	13 19
26	27	28	32 23
27	8	4	5 6QCK
28	18	12	5 21 KK
29	14	9	11 14 C
30	14	10	11 13 K
31	61	36	47 50

19.7 / 14.4 / 17.1

SEP.

	N	S	M
1	22	17	25 15
2	4	2	3 4QCC
3	10	11	12 9QCC
4	17	12	3 27
5	29	33	28 34
6	22	19	14 28
7	41	30	30 41
8	20	15	21 15
9	18	12	11 19
10	11	10	16 5 CK
11	14	15	13 17 C
12	13	13	16 11 C
13	35	25	41 19
14	17	20	22 15
15	16	17	18 15
16	22	14	21 15
17	28	21	15 35
18	48	54	73 29
19	14	23	22 15
20	22	29	22 29
21	10	9	8 12QC
22	9	7	8 8QCC
23	6	6	4 8QCC
24	24	7	3 28
25	40	41	48 33
26	40	29	11 59
27	54	53	65 42
28	18	18	21 16
29	14	9	12 12 C
30	38	34	19 53

22.6 / 20.1 / 21.4

OCT.

	N	S	M
1	38	44	46 36
2	34	32	34 32
3	41	26	41 27
4	31	22	24 29
5	30	29	32 28
6	32	43	36 38
7	32	30	12 51
8	40	32	43 30
9	71	39	67 43
10	17	13	19 12
11	21	18	11 28
12	17	15	5 27
13	29	28	25 32
14	21	22	14 29
15	19	16	19 17
16	8	9	6 11 CC
17	7	7	7 7QCC
18	5	4	4 5QCC
19	5	2	4 4QCC
20	12	9	8 13 CC
21	12	7	8 12 CK
22	19	20	15 24
23	12	19	8 23
24	23	29	20 33
25	16	11	12 15 C
26	7	4	3 8QCC
27	8	7	8 8QCK
28	35	25	17 43
29	57	43	55 45
30	26	23	34 14
31	12	9	9 13 CK

23.8 / 20.5 / 22.2

NOV.

	N	S	M
1	10	8	13 5 CC
2	6	4	3 8 CC
3	5	5	5 5QCC
4	10	8	9 9 CC
5	8	11	8 11 CC
6	6	5	5 6 CC
7	11	14	18 8 KK
8	20	16	10 27 K
9	6	6	7 5 CK
10	11	9	5 16 CK
11	28	25	24 29
12	19	11	15 15
13	9	6	8 8 CC
14	5	4	3 6QCC
15	6	4	7 4QCC
16	3	4	4 3QCC
17	4	3	2 4QCK
18	15	20	22 14 K
19	13	19	12 21
20	12	14	13 14
21	21	24	19 26
22	50	52	46 56
23	73	64	72 65
24	68	54	53 69
25	58	69	73 54
26	31	37	42 26
27	18	19	16 22
28	21	16	21 17
29	11	11	7 16 CK
30	10	11	10 12 CC

19.0 / 18.5 / 18.8

DEC.

	N	S	M
1	11	13	12 13 CC
2	11	12	6 17 K
3	27	27	24 31
4	15	14	16 14
5	8	10	11 8 CC
6	6	7	9 4QCC
7	5	6	5 6QCC
8	6	8	8 7QCC
9	13	15	17 11 C
10	7	6	5 9QCC
11	13	21	8 27 K
12	19	19	10 28
13	26	23	19 31
14	10	7	4 14 CK
15	19	18	9 29
16	31	30	27 34
17	24	26	23 27
18	15	19	19 14
19	13	15	13 16
20	26	16	21 23
21	9	7	13 3 CK
22	6	13	7 12 CK
23	23	25	22 27
24	25	31	40 16
25	17	13	14 16

17.9 / 19.1 / 18.6

ANNUAL MEAN N 21.12 S 18.93 M 20.10

1972

JAN.

	N	S		M
1	16	13	10	19
2	16	18	13	21
3	12	18	19	11
4	18	16	24	10
5	9	13	13	10 CC
6	5	7	9	3QCC
7	9	7	7	10QCC
8	8	10	10	9QCC
9	15	11	12	14 CC
10	16	14	8	24
11	26	29	34	22
12	9	10	9	10 CK
13	7	7	6	8QCC
14	8	6	8	6QCK
15	37	37	21	93
16	43	49	42	50
17	32	27	25	34
18	34	39	39	35
19	18	22	16	24
20	19	15	12	23
21	23	41	20	45
22	41	41	27	55
23	54	36	48	42
24	18	17	16	20
25	35	23	22	36
26	32	32	37	27
27	24	30	21	33
28	36	44	21	59
29	23	25	16	33
30	18	10	14	14
31	14	11	7	19 KK
	21.8			
		21.8		
			21.9	

FEB.

	N	S		M
1	16	18	14	20
2	21	23	25	19
3	17	20	14	23
4	14	22	21	14
5	11	13	8	17 KC
6	15	11	10	16 KK
7	19	13	10	22
8	12	12	16	8 CK
9	6	7	6	8QCC
10	19	24	18	25
11	8	17	15	11 K
12	7	7	9	6QCK
13	34	34	16	53
14	29	18	29	19
15	22	19	23	17
16	14	13	13	15
17	52	36	24	65
18	20	15	13	23
19	22	30	27	24
20	18	17	21	15
21	20	14	15	20
22	9	10	8	11QCK
23	12	14	11	15 C
24	43	60	48	55
25	34	25	22	38
26	13	8	11	10 K
27	10	8	5	13QCC
28	11	8	12	7 CC
29	4	6	5	4QCC
	18.4			
		17.9		
			18.3	

MAR.

	N	S		M	
1	16	16	11	22	K
2	22	18	9	31	
3	27	33	28	32	
4	15	16	18	16	
5	13	8	8	13 CC	
6	33	31	14	50	
7	59	83	102	40	
8	20	22	16	26	
9	19	23	19	23	
10	7	5	4	8QCK	
11	15	12	17	9	KK
12	9	6	4	11QCK	
13	11	14	16	10	KK
14	7	8	7	8QCC	
15	13	12	6	20 K	
16	36	31	41	26	
17	32	23	24	32	
18	21	21	30	12	
19	10	9	8	12QCC	
20	10	8	11	8 CC	
21	12	9	12	9QCC	
22	22	15	18	20	
23	15	23	19	20	
24	30	30	29	32	
25	19	18	23	14	
26	22	17	8	31	
27	31	22	23	31	
28	29	9	31	7	
29	37	39	29	47	
30	38	40	39	38	
31	34	22	23	34	
	22.1				
		20.7			
			21.5		

APR.

	N	S		M	
1	28	24	18	36	
2	13	15	21	8	
3	8	4	5	9QCK	
4	32	28	24	38	
5	30	18	34	14	
6	16	16	13	19	
7	14	20	14	20	
8	10	11	4	17	KK
9	7	4	8	3QCK	
10	9	9	8	11 CC	
11	9	5	8	7 CC	
12	18	14	10	23	
13	20	18	18	21	
14	11	12	12	11 CK	
15	12	11	10	13 CC	
16	14	8	11	12 CC	
17	8	6	9	9 C	
18	36	36	35	37	
19	15	22	22	16	
20	16	11	9	20	
21	29	33	34	28	
22	25	18	3	40	
23	14	18	17	16	
24	9	6	9	7QCC	
25	6	4	4	6QCC	
26	6	4	4	6QCC	
27	19	8	4	24	K
28	26	39	28	38	
29	57	69	51	76	
30	32	34	39	26	
	18.5				
		17.6			
			18.1		

MAY

	N	S		M	
1	31	32	31	32	
2	33	26	31	29	
3	15	10	11	14 C	
4	12	10	8	14 CC	
5	12	6	8	11 CC	
6	20	14	13	22	K
7	7	4	5	5QCK	
8	9	6	2	13QCK	
9	27	33	26	34	
10	16	21	15	22	
11	15	13	10	18	
12	17	17	18	16	
13	16	12	12	17	
14	15	12	12	16	K
15	41	31	4	68	
16	27	17	36	10	
17	20	17	20	18	
18	17	18	25	9	
19	9	5	7	7QCC	
20	11	5	9	7QCC	
21	8	3	5	6QCC	
22	14	4	8	10 CC	
23	22	6	7	23	K
24	11	5	11	5 CK	
25	9	6	7	9 CC	
26	24	11	12	24	K
27	16	12	5	24	
28	39	27	23	43	
29	22	17	22	18	
30	30	14	19	26	
31	23	17	23	18	
	19.0				
		14.0			
			16.6		

JUNE

	N	S		M	
1	14	7	12	7	CC
2	19	7	8	14	CC
3	23	16	18	22	
4	34	16	22	30	
5	22	23	25	20	
6	16	10	4	22	K
7	20	15	15	20	
8	14	11	9	17	CK
9	7	5	7	9QCC	
10	7	6	7	7QCC	
11	7	4	5	9QCC	
12	6	4	5	9QCC	
13	17	12	12	17	
14	15	12	12	16	K
15	20	12	11	21	
16	26	14	22	16	
17	14	14	12	15	C
18	79	89	31	133	
19	130	110	134	106	
20	25	31	44	13	
21	11	4	4	12	CK
22	25	22	16	31	
23	23	21	20	24	
24	31	23	17	39	
25	14	8	6	16	C
26	19	19	14	25	
27	29	24	14	40	
28	26	24	31	20	
29	18	24	17	25	
30	4	5	6	3QCK	
	23.3				
		19.4			
			21.5		

JULY

	N	S		M	
1	11	7	4	14	CC
2	19	8	7	20	
3	17	10	14	13	K
4	8	3	4	7	CC
5	7	3	5	9QCC	
6	8	3	4	7	CC
7	21	16	12	25	
8	19	14	23	11	
9	16	16	11	22	
10	18	12	12	19	
11	15	13	13	15	
12	16	12	10	19	K
13	7	3	4	6QCK	
14	9	4	5	8QCC	
15	14	6	10	11	CC
16	20	12	13	20	
17	17	14	14	17	
18	13	8	12	10	CC
19	18	13	12	19	K
20	10	8	10	9	CC
21	5	2	4	4QCC	
22	22	12	4	30	K
23	22	14	15	21	
24	33	27	11	50	
25	57	46	48	55	
26	27	32	27	32	
27	14	18	19	13	
28	10	10	12	8	CC
29	8	4	4	8QCC	
30	10	6	4	11	CC
31	11	5	4	12	CK
	16.2				
		11.6			
			14.0		

AUG.

	N	S		M	
1	20	11	19	13	K
2	11	6	10	7	CC
3	12	8	7	14QC	
4	202	158	125	236	
5	194	236	261	170	
6	119	76	123	72	
7	32	34	44	22	
8	23	16	6	33	
9	90	103	147	47	
10	35	25	22	38	
11	33	27	23	38	
12	16	9	10	15	C
13	15	8	9	14QCK	
14	24	16	14	27	
15	22	11	22	11	
16	13	9	10	12	CC
17	13	13	10	17	CC
18	23	19	13	28	
19	23	17	18	23	
20	25	17	12	31	
21	26	20	23	24	
22	15	19	23	11	
23	5	4	5	4QCC	
24	5	5	3	7QCC	
25	10	10	8	13QK	
26	28	27	34	21	
27	29	50	60	20	
28	16	12	9	20	
29	17	12	12	17	
30	13	9	11	12	CC
31	9	6	9	7	CC
	36.1				
		32.1			
			34.2		

SEP.

	N	S		M	
1	10	7	11	6QCC	
2	11	15	9	18	KC
3	8	9	7	11	CK
4	10	9	12	8	CC
5	9	6	8	8QCK	
6	26	14	22	19	
7	7	13	11	10	C
8	18	25	23	20	
9	14	12	16	10	C
10	30	19	18	32	
11	17	23	22	18	
12	6	12	13	5	CK
13	71	63	10	123	
14	67	57	88	36	
15	31	39	42	27	
16	31	35	21	46	
17	44	39	46	36	
18	19	23	27	15	
19	9	8	13	4	CC
20	6	5	7	4QCC	
21	4	4	5	3QCC	
22	8	8	5	12QCC	
23	23	23	12	34	
24	32	32	25	39	
25	9	10	13	7	C
26	12	16	14	15	C
27	13	10	13	10	CC
28	17	14	12	20	
29	45	37	26	57	
30	16	8	16	11	C
	20.9				
		19.8			
			20.4		

OCT.

	N	S		M	
1	12	12	13	11	CC
2	15	5	6	14	CC
3	10	8	8	11QCK	
4	11	11	18	5	KK
5	4	4	3	5QCC	
6	4	3	2	4QCC	
7	15	17	6	27	K
8	8	4	7	6QCK	
9	9	7	3	13	CC
10	14	14	11	18	
11	25	23	30	18	
12	47	28	12	64	
13	32	20	24	29	
14	42	42	46	38	
15	16	12	10	18	
16	24	22	24	22	
17	4	2	3	4QCK	
18	21	22	12	31	
19	45	43	58	30	
20	29	25	27	27	
21	30	22	21	32	
22	25	22	20	28	
23	34	25	25	34	
24	21	20	15	26	
25	11	18	15	14	
26	26	42	32	36	
27	31	32	32	32	
28	48	44	9	83	
	21.5				
		19.3			
			20.4		

NOV.

	N	S		M	
1	90	93	142	41	
2	69	61	66	64	
3	31	14	38	7	
4	12	8	10	12	CC
5	9	6	7	9QCC	
6	12	12	12	13	CK
7	14	17	16	15	
8	14	11	11	14	CC
9	17	16	11	22	K
10	7	7	5	6QCK	
11	17	15	11	23	
12	9	15	16	8	CK
13	4	3	4	4QCC	
14	5	8	5	8QCC	
15	35	28	17	46	
16	50	35	45	41	
17	21	18	18	22	
18	15	18	14	20	
19	20	20	22	19	
20	44	35	36	44	
21	17	10	18	9	
22	27	31	11	46	
23	22	18	18	23	
24	9	11	13	8	C
25	15	13	12	16	
26	17	22	24	16	
27	25	22	15	32	
28	21	33	22	32	
29	19	13	16	17	
30	13	10	8	15QC	
	22.7				
		20.7			
			21.6		

DEC.

	N	S		M	
1	9	11	16	4	CC
2	10	12	11	12	CC
3	15	12	14	14	K
4	6	9	9	7	CC
5	4	4	4	4QCC	
6	5	5	4	6QCC	
7	19	20	16	22	
8	13	15	11	18	
9	6	6	5	10	CC
10	4	7	6	4QCC	
11	6	4	6	4	CC
12	12	19	8	24	
13	56	59	57	58	
14	14	14	14	15	
15	56	38	25	69	
16	57	44	58	43	
17	26	27	29	24	
18	17	20	15	22	
19	12	13	9	17	C
20	6	6	8	7	CC
21	4	9	4	9QCC	
22	26	27	11	45	
23	69	37	59	48	
24	21	29	42	7	
25	9	10	6	13	CC
26	7	15	12	11	CC
27	4	7	7	4QCC	
28	10	14	9	16	CK
29	26	25	24	27	
30	41	27	25	43	
31	24	24	22	26	
	19.3				
		18.4			
			18.9		

ANNUAL MEAN N 21.67 S 19.44 M 20.62

JAN.

	N	S		M
1	19	17	29	8
2	3	4	3	4QCC
3	5	7	4	8QCC
4	21	23	17	28
5	39	33	21	52
6	32	22	36	19
7	14	15	9	21
8	26	27	18	36
9	34	30	23	41
10	52	37	43	47
11	40	30	31	40
12	44	41	29	55
13	25	34	30	28
14	15	13	20	9
15	15	21	19	17
16	18	10	16	13
17	8	11	10	9QCC
18	4	8	7	5QCC
19	21	21	7	36
20	48	28	48	28
21	31	32	45	19
22	10	9	8	12QC
23	21	25	23	23
24	42	39	31	50
25	35	36	31	40
26	46	32	31	48
27	54	56	48	62
28	48	44	45	48
29	38	32	30	40
30	25	12	20	17
31	15	20	19	17

27.4
24.7
26.1

FEB.

	N	S		M
1	29	34	31	32
2	26	21	19	29
3	34	29	27	37
4	14	11	13	12QC
5	13	25	26	13
6	28	32	20	41
7	24	30	19	36
8	38	37	34	41
9	31	28	34	26
10	21	19	17	24
11	15	16	20	14Q
12	16	13	12	17 C
13	5	8	4	9QCK
14	11	16	16	12QKK
15	15	11	16	10QCC
16	21	15	6	30
17	28	28	32	24
18	23	18	10	31
19	20	18	12	27
20	19	19	8	31
21	85	66	26	125
22	74	62	39	98
23	68	77	62	84
24	79	69	56	92
25	56	42	34	64
26	56	41	38	58
27	73	61	50	84
28	29	25	31	24

34.0
31.2
32.7

MAR.

	N	S		M
1	42	21	17	46
2	62	52	57	59
3	28	16	27	17
4	10	5	11	5QCC
5	13	14	3	23 K
6	36	47	32	51
7	12	16	13	15
8	13	12	6	19 K
9	19	19	23	16
10	16	14	12	19
11	15	19	15	20
12	25	19	19	27
13	11	12	11	13QK
14	5	7	7	5QCC
15	16	14	12	19
16	22	27	20	29
17	14	13	10	17Q
18	30	33	17	46
19	93	96	83	106
20	111	86	92	104
21	68	77	66	79
22	59	71	65	67
23	73	83	67	89
24	60	69	51	79
25	64	69	63	70
26	54	38	36	56
27	46	47	39	55
28	38	38	26	50
29	35	29	28	36
30	25	25	22	29
31	54	51	19	86

37.3
36.5
36.9

APR.

	N	S		M
1	112	81	28	165
2	62	77	85	55
3	38	36	43	31
4	16	16	18	14
5	11	8	14	5QKK
6	6	6	8	4QCC
7	6	7	10	4QCC
8	11	11	8	15 KK
9	12	7	11	9 CK
10	4	4	3	5QC
11	31	43	45	30
12	5	5	4	7QC
13	66	74	70	70
14	66	61	58	69
15	52	64	58	58
16	61	59	58	62
17	52	61	59	53
18	45	62	68	39
19	34	36	41	29
20	24	23	27	20
21	35	18	23	31
22	54	43	25	72
23	33	40	44	29
24	35	35	21	48
25	71	57	62	67
26	27	30	29	29
27				
28				
29				
30				

39.2
39.9
39.6

MAY

	N	S		M
1	26	26	17	37
2	19	14	17	17
3	16	13	19	11
4	12	13	11	15 KC
5	12	5	6	12 CC
6	28	15	4	39
7	31	19	25	26
8	30	33	24	40
9	18	24	18	25
10	13	13	15	12 C
11	14	8	10	12 CC
12	14	10	11	13 C
13	29	25	27	28
14	74	101	92	83
15	45	47	36	57
16	42	48	46	43
17	40	56	51	44
18	40	36	43	33
19	38	32	34	36
20	42	52	41	53
21	71	77	111	37
22	36	24	36	24
23	26	40	48	18
24	9	6	8	7QCC
25	14	11	9	17QCK
26	18	9	18	10
27	19	14	14	20
28	21	12	17	16
29	6	4	5	5QCC
30	5	3	2	5QCC
31	9	3	4	9QCC

26.4
25.6
26.1

JUNE

	N	S		M
1	7	3	4	5QCK
2	37	31	30	38
3	30	19	25	25
4	27	27	21	32
5	22	19	24	17
6	19	17	22	13
7	7	4	6	5QCC
8	16	6	9	13 CC
9	22	8	10	21
10	42	30	15	56
11	44	54	43	59
12	52	47	46	54
13	39	41	44	38
14	53	32	44	21
15	26	25	22	29
16	22	22	19	23
17	32	25	24	34
18	47	44	50	41
19	62	46	62	47
20	34	37	39	32
21	11	11	15	7 C
22	21	9	11	19
23	54	43	38	59
24	12	7	7	12 C
25	10	7	11	6QCC
26	8	4	4	8QCK
27	30	36	30	38
28	62	56	67	52
29	48	47	48	48
30				

29.4
25.2
27.3

JULY

	N	S		M
1	32	38	34	37
2	20	16	21	16
3	16	12	14	14 C
4	9	5	8	6QCC
5	8	5	6	8QCC
6	5	5	4	6QCC
7	6	3	4	4QCK
8	24	33	21	36
9	20	25	17	29
10	13	8	13	8QC
11	14	9	10	13 CC
12	14	9	8	16 CK
13	21	16	15	23
14	18	8	12	14 C
15	46	47	37	57
16	30	29	38	21
17	11	13	17	8 K
18	17	6	11	13 CK
19	19	19	18	20
20	21	15	18	19
21	10	10	10	10 CK
22	13	5	11	8 C
23	28	28	36	20
24	10	14	12	12 C
25	19	21	25	14
26	48	47	36	60
27	40	44	44	39
28	26	25	27	25
29	35	30	36	29
30	31	26	24	34
31	41	52	65	28

21.4
20.1
20.9

AUG.

	N	S		M
1	26	31	36	21
2	31	30	31	31
3	15	11	10	17 K
4	15	12	11	16 KK
5	19	9	8	21
6	29	23	28	24
7	17	18	8	27
8	20	13	19	15
9	9	10	12	7 CC
10	8	7	10	5 CC
11	7	9	7	10QCC
12	10	5	3	12 CK
13	23	17	17	24
14	22	13	16	19
15	11	7	8	11QCC
16	7	4	3	8QCC
17	3	3	2	4QCC
18	8	10	8	11QCC
19	13	8	9	13 CK
20	17	18	16	19
21	24	25	27	23
22	25	14	6	34
23	43	44	26	61
24	52	49	69	33
25	42	45	52	35
26	34	27	33	29
27	47	36	44	39
28	47	37	33	52
29	33	30	36	27
30	18	29	30	17
31	16	19	20	16

21.9
19.2
20.6

SEP.

	N	S		M
1	7	7	7	7 CC
2	14	8	7	16 CC
3	13	6	6	14 C
4	27	19	20	27
5	38	20	24	34
6	15	15	15	15
7	16	18	19	15
8	14	17	11	21
9	66	46	23	69
10	47	44	27	65
11	28	18	22	24
12	17	10	9	19
13	17	17	14	20
14	16	13	12	17
15	23	20	13	31
16	21	23	29	14
17	15	16	18	13
18	17	13	15	15 K
19	5	4	4	6QCC
20	24	16	9	31
21	37	27	15	50
22	85	83	75	93
23	42	41	32	50
24	38	34	24	48
25	28	44	46	26
26	16	21	18	20
27	6	13	9	13QCK
28	8	7	9	7QCC
29	7	6	5	8QCC
30				

24.2
21.4
22.8

OCT.

	N	S		M
1	11	4	5	11QC
2	43	40	48	36
3	48	61	72	37
4	22	19	15	26
5	28	15	7	36
6	28	19	21	26
7	14	6	14	6 K
8	11	12	14	9 CC
9	24	14	7	33
10	40	37	34	43
11	21	19	19	22
12	25	25	23	27
13	28	31	37	22
14	16	13	12	17
15	8	11	16	4QC
16	44	45	40	50
17	43	45	42	46
18	34	31	23	43
19	27	32	33	26
20	36	40	36	41
21	60	49	44	65
22	34	28	36	26
23	11	9	10	10 C
24	12	14	11	15 CC
25	11	9	10	10QCC
26	7	6	10	3QCC
27	7	7	5	9QCK
28	36	32	18	50
29	130	88	75	142
30	34	43	42	35
31	22	24	36	11

29.6
26.7
28.2

NOV.

	N	S		M
1	9	13	7	15QCC
2	13	11	11	13 CC
3	9	9	10	8QCC
4	42	28	11	58
5	21	32	25	28
6	15	16	12	20
7	50	39	41	48
8	15	19	20	15
9	19	28	23	24
10	13	13	18	9 K
11	9	15	12	13 CC
12	6	7	7	7QCC
13	22	21	13	30
14	14	16	13	18
15	13	23	17	19
16	20	22	13	30
17	31	25	29	28
18	25	30	38	17
19	6	7	7	6QCC
20	7	10	7	11 CK
21	38	41	21	58
22	9	12	14	6 C
23	16	17	10	24 K
24	42	49	12	79
25	55	61	63	53
26	24	24	31	18
27	22	25	15	32
28	13	14	13	14
29	7	9	8	9 CC
30	11	7	4	15QCC

19.9
21.4
20.7

DEC.

	N	S		M
1	8	6	10	4QCC
2	3	6	5	4QCC
3	11	13	8	16 KK
4	51	42	23	70
5	28	26	26	29
6	16	18	19	16
7	14	10	12	12 CK
8	14	14	12	17
9	32	39	27	44
10	13	11	16	8 K
11	19	18	17	18 K
12	14	17	4	26 K
13	9	19	13	15
14	6	7	6	8QCK
15	13	11	13	13 CC
16	14	11	10	13 CC
17	5	5	5	6QCC
18	32	29	10	51
19	59	42	33	68
20	54	57	41	70
21	36	36	36	36
22	32	24	26	31
23	5	7	9	3 CK
24	6	6	4	11QCC
25	8	10	8	9 CC
26	11	14	9	17 KK
27	21	23	19	26
28	38	32	32	38
29	23	25	24	27
30	26	32	29	29
31				

19.8
19.9
19.9

ANNUAL MEAN N 27.55 S 25.99 M 26.82

1974

JAN.

	N	S	M	
1	32	26	31	28
2	20	18	17	22
3	20	23	20	23
4	28	21	19	31
5	36	23	29	30
6	25	17	29	14
7	5	5	6	4QCC
8	22	16	8	31
9	10	19	14	16
10	24	27	18	34
11	11	11	15	7 C
12	9	11	10	11QCC
13	8	12	11	10 CC
14	17	14	13	19
15	19	39	17	41
16	26	26	25	27
17	33	22	28	28
18	44	39	33	50
19	14	15	14	16
20	25	17	20	23
21	25	23	29	19
22	10	7	8	11QCK
23	8	7	11	4QCC
24	12	8	6	13QK
25	85	86	65	106
26	54	44	53	45
27	69	45	53	62
28	35	26	20	42
29	40	45	39	46
30	44	32	23	53
31	32	23	25	31

27.2
24.2
25.8

FEB.

	N	S	M	
1	25	23	14	34
2	20	15	19	16
3	12	13	17	9 C
4	13	11	13	11 KC
5	16	16	8	24 K
6	12	13	9	17 K
7	17	15	18	14
8	12	10	6	17QKK
9	10	7	9	8QCK
10	33	23	16	41
11	44	40	25	60
12	76	48	74	51
13	45	24	26	44
14	20	18	20	19
15	8	5	6	5QCC
16	16	12	6	22
17	21	20	22	19
18	2	5	4	3QCC
19	7	7	6	8QCC
20	24	20	10	34
21	33	37	33	38
22	25	26	17	34
23	76	54	43	88
24	42	37	43	43
25	54	50	46	58
26	47	43	52	38
27	40	39	24	55
28	50	43	38	55

28.7
24.0
26.4

MAR.

	N	S	M	
1	29	35	27	37
2	29	26	27	29
3	32	39	30	41
4	19	19	26	13
5	36	29	17	48
6	40	29	31	39
7	28	24	15	38
8	24	27	23	28
9	57	34	29	62
10	57	39	48	48
11	54	41	45	50
12	25	22	23	24
13	13	14	19	8QK
14	34	27	24	38
15	6	4	3	7QC
16	54	61	25	90
17	11	12	16	7QC
18	4	5	4	5QCC
19	5	6	5	6QCC
20	28	32	9	52
21	88	69	56	101
22	48	57	65	41
23	46	47	39	55
24	42	42	39	45
25	47	37	41	43
26	40	37	29	46
27	36	39	48	28
28	28	28	27	29
29	56	45	31	70
30	30	30	33	28
31	42	43	41	44

35.1
32.2
33.7

APR.

	N	S	M	
1	29	26	26	29
2	26	23	16	34
3	64	61	43	82
4	40	49	46	43
5	22	35	26	31
6	38	36	43	31
7	30	33	37	26
8	24	24	19	29
9	30	30	23	38
10	38	44	41	41
11	28	32	36	24
12	4	4	4	4QCK
13	12	8	9	12 CC
14	64	66	74	57
15	48	54	36	67
16	60	72	59	74
17	54	56	56	53
18	45	44	44	45
19	43	61	59	45
20	32	30	25	37
21	32	37	35	34
22	45	23	31	38
23	27	39	48	19
24	34	37	27	45
25	28	33	17	45
26	29	32	23	38
27	39	48	19	
28	37	27	45	
29	33	17	45	
30	32	23	38	

32.2
33.6
32.9

MAY

	N	S	M	
1	17	9	7	20 K
2	34	30	22	43
3	36	28	45	20
4	54	37	34	57
5	42	47	50	39
6	13	9	15	7QC
7	22	21	13	30
8	21	15	12	24
9	20	19	24	15
10	5	3	4	4QCC
11	9	6	6	9QCC
12	10	4	8	5QCC
13	9	7	6	10QCC
14	9	4	6	8QCC
15	6	4	5	5QCC
16	46	49	43	53
17	48	57	56	50
18	32	47	44	34
19	33	45	36	42
20	32	39	34	37
21	32	43	40	35
22	44	41	33	52
23	43	46	36	53
24	57	63	62	58
25	26	31	28	29
26	24	23	21	27
27	27	20	28	20
28	18	16	23	11
29	16	15	14	18
30	31	25	17	40
31	48	36	34	50

29.5
28.7
29.2

JUNE

	N	S	M	
1	36	37	39	34
2	34	24	32	27
3	33	37	40	30
4	16	17	20	14
5	12	10	11	11QCC
6	14	11	14	12QKK
7	6	4	3	7QCC
8	13	10	8	15QKC
9	17	13	6	25Q
10	32	19	21	31
11	48	49	26	70
12	50	38	62	27
13	40	42	43	39
14	30	32	22	41
15	50	61	41	70
16	28	39	41	26
17	33	32	31	34
18	20	22	16	26
19	17	25	15	28
20	32	30	27	36
21	14	7	9	10 C
22	18	15	16	17
23	16	13	13	17
24	22	14	17	19
25	18	10	10	19
26	60	72	68	65
27	78	74	86	67
28	38	36	34	40
29	34	39	31	43
30	30	31	31	30

29.6
28.7
29.2

JULY

	N	S	M	
1	20	15	18	18
2	21	22	23	20
3	17	16	16	17
4	48	32	31	50
5	78	74	72	80
6	116	127	164	79
7	23	16	21	19
8	52	41	31	62
9	31	21	32	20
10	38	37	32	43
11	26	21	21	27
12	40	33	19	55
13	27	24	29	23
14	31	31	35	28
15	21	14	18	18
16	15	19	19	15
17	19	10	13	16
18	9	10	10	9QCC
19	13	11	9	16QCC
20	20	19	16	23
21	17	13	11	19
22	14	13	12	16Q
23	95	83	84	94
24	55	74	75	55
25	33	32	36	29
26	31	25	29	28
27	33	39	43	29
28	30	28	39	19
29	24	24	28	20
30	14	19	23	10Q
31	12	11	11	12QCC

33.0
30.7
32.0

AUG.

	N	S	M	
1	14	8	11	11QCC
2	32	39	8	63
3	54	61	43	72
4	42	28	41	29
5	31	35	34	32
6	41	32	25	48
7	34	36	25	45
8	29	30	35	24
9	28	25	25	29
10	30	24	34	21
11	17	19	19	18
12	12	7	10	10QCC
13	11	9	11	9QCC
14	9	6	10	6QCC
15	11	4	7	9QCC
16	12	8	9	12 CC
17	10	10	7	13 CC
18	21	13	11	24
19	48	56	43	62
20	59	48	62	46
21	42	69	63	48
22	50	49	46	53
23	47	54	58	43
24	46	41	48	40
25	24	25	25	24
26	17	13	10	21
27	30	28	30	28
28	38	26	24	41
29	43	53	56	40
30	35	23	29	29
31	41	29	31	40

30.9
29.3
30.2

SEP.

	N	S	M	
1	40	44	39	45
2	61	44	53	52
3	24	36	30	29
4	41	27	25	43
5	30	32	44	18
6	22	25	23	24
7	21	23	23	21
8	12	14	15	12
9	11	5	9	8QCC
10	10	10	11	9QCC
11	7	5	8	4QCC
12	10	9	4	14QKK
13	24	22	17	29
14	17	14	11	21
15	69	70	11	128
16	91	102	154	40
17	4	7	6	5QC
18	23	31	8	48
19	52	46	60	38
20	52	54	52	53
21	66	56	24	98
22	31	37	37	31
23	28	26	16	39
24	34	43	40	38
25	50	37	25	62
26	54	57	53	58
27	36	54	36	54
28	25	26	19	33
29	24	30	22	32
30	30	37	28	39

33.3
34.1
33.7

OCT.

	N	S	M	
1	48	49	47	51
2	57	48	22	64
3	19	19	24	15
4	16	13	12	18Q
5	19	13	11	21
6	16	18	25	10
7	11	11	10	12QCC
8	20	21	10	32
9	96	66	53	68
10	19	16	22	14
11	11	8	14	5QKK
12	30	22	11	41
13	90	94	111	73
14	42	31	17	57
15	64	47	74	38
16	81	71	64	89
17	68	74	64	79
18	59	44	53	50
19	57	44	39	62
20	68	59	61	65
21	18	18	22	15
22	26	26	21	32
23	8	8	8	8QC
24	54	64	78	39
25	46	35	35	46
26	48	47	45	51
27	45	42	37	50
28	42	45	34	53
29	27	30	34	24
30	18	18	15	22
31	12	9	11	11QCK

38.6
35.9
37.3

NOV.

	N	S	M	
1	10	8	9	9 CC
2	10	11	13	8QCC
3	9	11	10	10 CC
4	5	8	8	5QCC
5	11	9	7	13QCC
6	12	22	16	18
7	15	17	16	17
8	37	33	9	62
9	41	55	56	40
10	19	12	13	19
11	74	72	24	123
12	85	93	95	83
13	66	44	41	69
14	38	45	48	36
15	18	19	12	25
16	25	25	20	31
17	24	15	19	21
18	16	12	15	14
19	24	20	16	29
20	41	37	41	38
21	41	30	27	45
22	28	26	27	27
23	28	23	21	31
24	50	30	29	52
25	35	26	29	32
26	32	30	20	43
27	13	17	13	16
28	7	14	15	7 CC
29	3	7	6	4QCC
30	4	6	5	5QCC

27.4
26.0
26.8

DEC.

	N	S	M	
1	13	17	6	44Q
2	23	27	23	27
3	28	30	25	34
4	12	17	22	6
5	22	16	10	29Q
6	7	9	10	6QC
7	12	21	16	18
8	26	32	17	41
9	74	69	54	67
10	36	27	34	31
11	36	31	24	43
12	25	31	28	48
13	44	30	20	55
14	24	16	24	14
15	26	20	20	27
16	16	14	6	25Q
17	33	32	22	43
18	45	56	51	50
19	50	41	36	55
20	42	37	41	38
21	34	32	25	41
22	26	21	26	22
23	40	35	19	56
24	26	24	20	31
25	26	21	10	37
26	19	22	22	19
27	40	39	44	34
28	16	22	23	15
29	13	16	15	17 C
30	10	9	8	12QC
31	20	21	22	20

27.8
27.0
27.5

ANNUAL MEAN N 31.11 S 29.53 M 30.39

	JAN.				FEB.				MAR.				APR.				MAY				JUNE			
	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M
1	18	17	22	14	68	49	53	64	38	32	36	34	13	10	14	9 C	12	12	9	16 C	46	27	11	62
2	9	5	6	8QCC	46	40	50	36	17	19	21	16	12	6	8	11 CC	30	36	21	45	50	54	72	33
3	12	21	16	18	21	18	23	17	24	14	15	24	13	9	11	11 CC	34	34	34	34	23	23	22	24
4	73	54	46	81	18	16	13	22	17	14	17	14	16	12	10	19 C	28	23	25	27	22	23	25	20
5	59	47	44	62	38	28	22	45	50	47	43	56	21	11	11	21	57	37	45	50	27	31	25	33
6	51	32	17	66	15	15	14	16Q	34	32	26	41	31	25	19	38	54	47	60	41	26	23	22	26
7	52	54	84	22	22	25	20	27	5	7	5	7QC	44	28	16	57	37	46	30	53	13	9	11	12 C
8	54	72	66	60	13	11	15	9QC	2	4	4	3QCC	49	51	31	69	28	23	18	34	9	7	7	10QCC
9	13	13	12	14 C	26	18	22	22	22	14	7	30	68	69	58	79	28	34	21	41	11	9	12	8 CC
10	9	10	14	6 CC	64	54	44	74	100	99	99	101	57	52	53	57	32	32	43	22	6	8	4	10QCK
11	8	8	10	7QCC	78	49	38	89	76	77	99	55	50	59	62	48	3	2	3	2QCK	25	18	19	25
12	7	10	6	11QC	61	57	55	64	56	64	44	75	40	47	37	50	5	3	2	6QCC	45	39	34	50
13	57	64	54	67	45	36	27	53	54	34	29	58	38	34	46	26	12	7	6	14 CK	26	22	24	25
14	57	57	47	67	45	37	38	45	47	47	36	58	31	25	32	25	18	24	26	17	19	21	18	22
15	29	28	21	38	34	29	25	38	27	37	27	37	13	14	10	18	4	4	4	3QC	27	26	13	41
16	45	39	33	52	56	36	36	55	36	52	45	43	7	11	11	8 CC	41	49	36	55	31	30	27	34
17	43	36	34	45	31	25	25	31	23	21	23	22	11	9	8	13QCC	26	29	33	23	23	24	18	29
18	40	26	29	38	28	24	26	26	32	26	18	41	9	18	10	18 K	18	14	17	16	25	24	27	22
19	21	21	26	16	19	19	19	20	20	21	11	30	9	8	9	9QCK	32	18	22	28	26	21	19	29
20	20	14	15	20	13	13	18	9QK	36	29	25	40	39	32	10	62	34	30	47	18	11	9	8	12 C
21	15	11	8	19 KK	17	17	13	22	5	5	8	3QC	38	27	30	35	24	15	14	26	21	16	16	22
22	14	13	6	22	15	16	17	15Q	14	13	16	12Q	21	23	22	22	19	22	23	18	9	9	12	7 CK
23	30	21	18	34	46	66	65	48	19	17	27	9	40	28	36	32	17	12	17	12	8	4	4	8QCC
24	20	16	21	15	30	25	16	39	26	33	17	43	31	23	32	22	10	9	10	9 CC	5	3	5	3QCC
25	10	10	7	14QKK	39	34	43	30	13	18	13	18Q	12	13	15	11 C	36	18	14	40	9	10	7	13 CC
26	8	9	9	8QCK	13	16	19	10	27	33	31	30	19	16	20	16	24	20	35	9	12	9	12	9 CC
27	23	27	21	29	9	11	10	10QCC	40	52	17	75	8	10	14	4QCC	22	21	18	26	10	4	7	6QCC
28	21	22	28	16	29	14	13	31	62	47	52	58	7	3	5	5QCC	10	5	7	9QC	9	7	8	9 CC
29	8	12	11	9 CC					29	43	42	30	6	4	6	4QCC	26	23	26	23	41	36	14	63
30	16	17	14	19					17	16	17	17	11	11	12	11 CC	13	10	12	12 CK	45	35	51	29
31	42	34	20	57					25	17	15	28					9	4	4	9QCC				
	28.6				33.5				32.1				25.6				24.0				22.0			
		26.4				28.6				31.8				22.9				21.3				19.3		
			27.6				31.1				32.0				24.3				22.7				20.7	

	JULY				AUG.				SEP.				OCT.				NOV.				DEC.			
	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M	N	S		M
1	23	30	30	23	17	11	21	8 K	18	14	10	22	11	16	21	6 K	13	15	10	18	56	41	41	55
2	16	11	14	14	13	8	11	11 CC	13	10	14	9 CK	7	3	4	6QCC	56	43	26	73	34	44	37	41
3	15	13	13	15 C	9	6	6	10QCC	6	3	3	6QCC	18	17	9	26	88	67	73	82	24	22	19	26
4	15	8	8	16 CC	12	7	6	13 C	6	4	4	6QCC	20	10	20	11	68	55	65	58	22	21	19	24
5	11	7	8	11QCC	46	39	48	38	6	5	4	8 CK	12	11	14	8 C	44	34	39	39	17	16	14	21
6	13	7	4	16 CK	14	11	21	4 K	30	22	26	27	40	38	32	46	21	22	22	21	18	15	9	45
7	25	22	24	24	12	14	2	23 K	13	7	12	8 C	71	46	59	59	22	21	18	25	9	5	7	8QC
8	42	52	55	39	23	21	36	9	14	15	11	19	68	59	48	79	16	11	13	14	35	34	18	51
9	46	46	48	44	29	28	21	37	43	42	26	60	57	54	67	45	48	60	39	68	30	32	34	28
10	33	35	31	38	23	26	33	16	38	40	43	36	48	36	44	40	45	23	17	51	13	17	10	21
11	28	45	48	26	14	11	13	12 KK	52	36	46	41	18	20	13	25	30	32	26	36	9	12	10	12 CK
12	13	9	8	15QC	7	3	5	6QCC	34	29	34	30	23	18	18	24	14	16	18	13	4	8	8	4QCC
13	19	15	8	26	10	13	11	12QC	33	23	39	17	18	12	11	19	6	4	8	3QCC	5	6	4	8QCC
14	32	25	28	29	29	29	41	17	21	27	32	16	16	29	20	25	6	7	6	7QCC	10	12	7	16 CC
15	27	29	26	30	34	34	27	41	14	12	11	16 K	7	9	11	6QC	9	7	6	10QCC	15	15	17	13
16	24	27	27	24	13	12	10	16 K	7	6	7	7 CC	21	25	21	25	10	9	11	8QCK	26	18	20	25
17	27	24	23	29	20	17	20	18	22	18	13	27	17	17	19	15	38	35	14	60	16	17	15	19
18	27	24	26	25	14	10	13	11 CK	24	21	16	29	8	11	5	15 CC	12	15	19	9	13	13	10	17 C
19	19	15	12	23	8	7	6	10QCK	16	14	15	16	9	6	4	10QCC	14	16	20	11 K	13	12	9	16 KK
20	11	11	15	8 C	25	34	11	48	15	12	9	18 KK	11	8	8	12 CC	21	15	14	23	7	4	7	9QCK
21	14	15	11	19 K	31	21	18	35	12	8	8	12 CC	11	9	13	7 CC	30	27	36	22	18	26	10	34
22	13	10	9	14 CC	26	21	27	20	7	5	7	6 CC	14	12	13	14 CC	97	80	57	120	18	20	16	22
23	10	10	12	9 CC	17	18	20	15	9	5	11	4 CC	15	8	13	10 CC	14	11	18	8 K	15	17	16	16
24	14	11	15	10 C	15	11	7	19 K	4	5	5	4QCC	7	6	10	4QCC	25	23	10	38	10	5	4	10QC
25	54	59	56	57	18	19	16	22	4	3	3	4QCC	6	11	8	9QCC	26	23	26	24	29	36	31	34
26	34	41	30	45	11	6	8	10QCK	27	24	13	39	11	9	7	14 KK	21	34	37	18	54	54	43	65
27	22	25	27	20	11	5	11	5 CC	23	29	28	25	10	9	14	6 CK	10	7	12	6QCK	54	46	41	60
28	20	19	19	21	13	8	8	13 C	16	16	13	19	21	15	6	31	13	15	16	12	26	24	29	22
29	9	7	7	10QCK	47	32	43	36	7	9	11	6 CK	26	14	25	16	60	44	45	60	29	24	27	26
30	11	9	11	10QCC	26	20	33	14	4	4	4	4QCK	18	14	17	15	59	43	38	64	17	19	21	16
31	12	4	5	12QCK	17	11	12	16 C					28	29	37	20					16	10	15	11 CC
	21.9				19.6				18.0				21.5				31.2				21.3			
		21.3				16.5				15.6				18.7				27.1				20.9		
			21.7				18.1				16.9				20.2				29.3				21.1	

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	JAN.				FEB.				MAR.				APR.				MAY				JUNE			
	N	S	M		N	S	M		N	S	M		N	S	M		N	S	M		N	S	M	
1	7	12	9	10QCC	41	29	27	43	36	28	31	34	102	141	192	51	20	19	12	27	13	14	10	18
2	7	9	5	11QCC	40	32	24	48	58	41	27	72	29	20	18	32	81	77	42	116	16	10	14	13 CK
3	35	36	19	52	27	26	30	25	46	52	37	62	53	53	35	70	121	120	192	50	16	13	9	23
4	18	22	17	24	28	20	17	32	21	18	24	15	40	47	50	38	34	39	31	43	36	29	43	22
5	19	18	22	16	16	17	9	25	26	30	20	37	38	42	41	39	22	30	32	20	40	32	34	38
6	26	19	11	34	18	14	19	13	54	39	25	67	36	64	56	44	16	22	19	20	18	17	16	20
7	21	19	21	20	47	36	30	53	47	44	41	50	39	40	37	42	23	17	20	21	29	22	24	26
8	13	9	8	15 CK	55	50	42	63	57	63	70	50	22	21	23	21	20	12	21	11	15	16	20	12
9	6	5	7	5QCK	41	41	41	41	54	56	45	65	29	24	23	31	10	6	11	6QCC	7	6	9	4QCC
10	68	75	23	119	43	35	34	44	52	45	41	57	16	20	23	12	13	13	8	19 KK	11	11	9	13 C
11	70	46	66	51	28	23	20	31	36	42	31	48	28	24	22	31	22	18	17	24	34	50	48	37
12	21	21	20	23	31	23	26	29	35	49	43	41	17	14	21	11	15	13	17	11	15	16	11	20
13	14	16	19	11	45	34	39	40	19	22	18	24	19	17	14	23	17	10	11	17 C	7	6	7	7 CK
14	16	21	19	19 K	26	31	29	28	20	24	31	14	26	25	18	34	6	4	4	5QCC	7	5	7	5QCC
15	15	10	4	21 K	19	15	10	25Q	25	32	20	38	6	4	5	5QC	11	10	4	17 KC	8	5	2	11 CC
16	24	19	12	31	12	11	10	14QC	36	32	26	43	11	11	14	9 CC	13	7	13	7QCC	13	6	10	9 C
17	24	24	20	29	28	26	12	43	31	34	39	26	7	12	13	6 CC	6	6	6	6QCC	27	26	25	29
18	20	17	22	15	45	37	50	32	21	20	21	20	3	3	4	2QCC	7	3	3	7QCC	36	36	46	27
19	14	14	12	17	47	36	36	49	18	23	22	20	8	6	7	8QCC	25	11	4	32	8	6	7	6QCK
20	22	23	12	33	31	33	29	35	15	17	19	13	4	4	4	4QCC	31	30	32	29	11	9	11	10 CC
21	34	42	34	43	28	23	26	26	8	12	7	14QCK	9	12	7	13QC	20	21	20	21	6	4	3	7QCC
22	49	39	29	59	24	18	24	19	4	5	5	4QCC	28	42	44	26	26	23	20	29	7	4	4	8QCC
23	36	37	32	41	7	9	9	7QCC	11	10	4	17QKC	13	9	13	9 C	25	26	20	31	9	5	7	6 CC
24	33	34	36	31	5	6	4	7QCC	7	5	8	4QCC	24	34	27	32	13	9	13	9 C	40	23	11	53
25	16	18	17	18	7	7	8	6QCK	8	7	4	11QC	14	14	12	17	23	18	18	23	36	26	30	33
26	9	14	14	9QCK	13	17	14	16	118	167	135	150	10	12	11	11 C	14	6	9	11 C	16	12	8	21
27	8	16	13	11 CC	43	44	23	65	48	56	42	62	21	24	22	23	10	10	12	8 C	18	12	17	14
28	8	7	8	8QCC	32	37	24	46	21	29	28	22	19	13	17	15	26	33	30	29	14	7	8	13 CC
29	9	11	13	8 CC	55	34	50	39	22	24	39	8	32	33	17	48	40	41	31	50	13	5	9	10 C
30	18	17	5	30					20	27	9	39	20	16	23	13	31	32	36	27	34	44	51	27
31	45	49	28	67					18	23	23	18					19	18	17	21				
	23.3				30.5				32.1				24.1				24.5				18.8			
		23.1				26.4				34.7				26.7				22.7				15.9		
			23.3				28.5				33.4				25.4				23.7				17.5	

	JULY				AUG.				SEP.				OCT.				NOV.				DEC.			
	N	S	M		N	S	M		N	S	M		N	S	M		N	S	M		N	S	M	
1	31	38	46	23	17	16	12	21	24	18	19	24	26	30	33	23	19	14	19	15	13	14	7	21 K
2	22	21	21	23	19	12	21	11	33	48	53	29	31	33	43	22	16	12	11	17	4	7	5	7QCC
3	28	30	30	28	23	19	16	27	22	25	24	23	16	16	18	14	18	9	12	16 K	7	6	5	8QCK
4	29	36	32	34	14	11	11	14 C	26	24	23	28	12	11	10	13 C	9	10	11	9 CK	28	38	31	36
5	15	16	12	20	14	12	9	17 KK	21	21	27	16	20	17	27	10	7	11	10	9QCC	10	12	11	11 C
6	14	11	14	11 C	13	7	11	9 CC	17	14	17	14	20	20	25	15	4	6	6	4QCC	7	6	4	9QCC
7	23	12	20	16	12	14	10	16 KC	18	19	18	20	14	7	7	14 CK	6	9	10	5 CC	19	20	14	25
8	27	23	20	30	11	7	9	9QC	18	13	17	14	13	13	8	20 K	11	12	7	18 KK	26	34	38	23
9	26	14	24	17	24	29	31	22	11	11	15	8QCC	13	12	11	15 C	15	15	18	13	26	30	26	31
10	13	11	15	10 CC	19	20	22	17	11	11	8	14QCC	15	12	10	17	41	33	21	53	24	20	15	30
11	11	6	8	10QCC	9	9	12	7 CC	11	10	10	11QCC	19	15	14	21	47	38	26	58	26	22	31	18
12	12	11	10	13 CC	10	6	5	11QCC	22	17	19	21	32	16	13	36	48	30	38	42	29	26	20	37
13	10	5	8	7QCC	10	5	8	8QCC	13	8	12	10QC	13	14	17	11	48	46	50	45	13	14	14	13 K
14	13	9	13	10 CC	10	12	12	10 KC	22	18	20	21	13	12	8	18 K	30	24	19	37	6	4	5	4QCC
15	36	23	13	46	6	6	4	8QCK	20	20	25	15	50	42	36	57	20	19	15	24	3	4	4	3QCC
16	29	32	32	29	19	17	12	24 K	13	9	11	11 CC	42	47	62	27	9	14	9	14 C	12	20	12	20 K
17	11	8	9	10 C	14	6	9	12 CK	21	15	15	22	50	45	48	48	13	14	16	11 CC	19	24	13	30
18	13	8	11	10 CC	12	6	9	10QCC	35	52	62	25	36	24	31	30	10	4	5	8 CC	42	34	55	22
19	14	8	13	9 CC	11	13	13	11 CC	37	36	25	48	20	15	8	27	18	17	18	18	11	12	13	10 C
20	10	4	8	7QCC	13	5	9	10 CC	71	61	65	67	17	14	16	15	15	20	20	15	9	10	9	10 CC
21	9	6	7	7QCC	20	19	16	24	43	35	29	50	14	15	16	14	7	8	8	8 CC	8	14	10	13 CC
22	11	10	14	8 CC	13	7	11	10 C	36	33	33	37	11	19	18	12Q	7	11	11	8 CC	19	22	16	22
23	15	8	9	14 CC	56	66	30	92	22	26	26	22	10	14	14	11 CC	8	7	8	8QCC	8	11	13	6 C
24	12	7	5	15 C	36	46	50	33	15	11	16	11 K	14	12	9	18 KK	5	6	7	4QCC	12	14	14	12 CC
25	22	17	22	18	45	39	45	40	46	41	34	53	12	8	13	7QCK	18	19	18	20	16	21	15	22
26	11	6	8	10QCK	32	30	34	28	29	22	28	24	9	4	6	7QCC	19	24	17	26	12	12	14	10 C
27	19	21	16	24	30	24	30	25	18	26	25	20	18	12	8	22 K	14	13	17	11	16	13	9	21 K
28	38	36	36	38	23	23	17	29	16	8	12	13QC	8	12	7	14QCK	4	6	4	7QCC	11	13	9	15 K
29	33	34	36	31	12	14	14	12 C	20	16	14	23	5	4	5	4QCC	13	10	7	17 CK	52	65	102	34
30	42	28	39	32	12	8	8	13 CC	23	13	10	27	33	29	13	50	20	20	19	22	21	36	17	39
31	19	16	20	16	15	12	7	21					59	47	50	56					26	19	22	24
	19.9				18.5				24.4				21.5				17.4				17.2			
		16.6				16.7				22.8				19.1				16.1				19.9		
			18.4				17.7				23.7				20.4				16.9				18.6	

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	JAN.				FEB.				MAR.				APR.				MAY				JUNE			
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1	38	32	33	37	14	10	10	15 K	26	20	15	32	7	10	10	8QCC	28	19	12	36	20	14	12	23
2	9	7	11	7QC	39	28	38	29	12	11	8	15QC	10	8	9	10QCK	85	96	56	125	26	25	21	31
3	17	13	11	19 K	22	15	18	20	6	9	8	8QCC	21	16	23	15	23	27	34	16	11	8	11	9 C
4	19	18	13	25	7	8	10	6QC	6	5	3	9QCC	40	36	39	36	37	24	10	52	14	10	15	9 CC
5	27	18	20	26	14	22	24	13	6	9	6	9QCC	19	19	15	24	23	18	17	25	12	20	17	16 K
6	18	16	20	15	34	33	14	53	17	15	7	26 K	61	49	22	89	21	24	22	23	10	8	11	8QCK
7	12	12	13	11 CC	32	32	27	38	9	10	12	8 CK	54	59	67	46	15	8	11	12 CK	12	7	9	10 CC
8	12	18	13	18 K	36	18	17	38	22	17	8	31	41	56	43	54	6	5	4	6QCC	15	9	8	17 CC
9	9	14	10	13 CK	46	36	25	57	54	66	49	70	33	40	41	32	16	14	13	17 K	15	6	9	12 C
10	5	10	7	9QCC	23	27	21	30	38	32	34	36	25	25	21	30	18	21	18	21	17	15	24	6 K
11	22	26	6	42	27	25	26	26	39	34	22	51	27	23	16	34	52	32	26	58	7	4	5	7QCC
12	24	20	20	24	17	9	14	12 C	40	32	34	38	20	18	12	27	21	31	41	11	9	6	7	8QCC
13	17	12	15	14	20	21	17	25	28	20	21	28	10	8	10	9 C	10	11	6	13 KK	12	10	6	15 C
14	40	25	26	39	27	23	14	36	22	18	31	10	21	19	21	20	16	15	17	15	21	13	24	11
15	22	17	24	16	22	13	10	25	12	10	14	7 CC	16	13	20	9	24	25	26	24	9	4	5	8QCC
16	12	12	8	17 KC	12	11	17	7QC	13	10	11	12 CC	36	25	13	48	42	36	41	36	22	13	8	26
17	10	15	11	14 K	19	25	10	34	23	17	15	26	18	14	22	11	29	41	44	25	22	13	18	18
18	20	22	31	11	28	27	34	23	21	16	23	15	17	14	12	19	23	25	31	17	19	21	16	25
19	21	15	14	22	13	19	13	20Q	10	8	7	12 C	60	83	90	53	14	6	9	11 CK	16	19	17	18
20	23	19	25	18	10	13	10	13QC	25	18	21	23	42	45	41	47	20	22	16	26	21	18	27	13
21	8	11	14	5QKK	16	18	14	20 K	23	18	8	33	22	16	21	18	11	5	8	9QC	13	10	12	11 CC
22	16	15	8	24 K	17	15	7	26	14	13	20	8	11	11	14	11 CC	11	18	22	8 K	25	17	10	35
23	13	13	9	18 K	32	31	19	45	23	23	14	32	12	8	7	13 CC	18	9	13	14 C	22	13	21	14
24	16	16	16	17	28	23	13	39	22	17	20	20	23	21	13	31	17	13	15	15	14	9	13	10 CC
25	17	19	11	26	26	17	14	30	32	18	14	36	24	31	46	10	12	9	10	11 CC	12	7	8	12QCC
26	9	5	8	6QCK	16	10	13	13 C	29	26	34	20	9	6	10	8QCC	7	3	3	7QCC	14	8	11	11 CC
27	7	11	8	11QCC	6	5	4	8QCC	20	16	14	22	6	7	7	7QCC	7	5	7	6QCC	16	10	15	11 C
28	24	22	7	40	15	12	15	13 C	25	23	21	27	9	6	5	11QC	13	11	11	13 CC	26	19	22	23
29	32	27	41	19					22	22	25	20	31	47	44	35	7	4	4	7QCC	17	9	14	13 C
30	47	52	38	62					9	11	8	13 CK	18	13	13	19	10	6	9	8 CC	20	12	11	21
31	31	21	36	16					6	9	9	7QCC					16	9	10	15 CC				
	19.4				22.2				21.1				24.8				20.9				16.3			
	17.9				19.5				18.5				24.9				19.1				11.9			
	18.7				21.0				19.9				24.9				20.1				14.2			

	JULY				AUG.				SEP.				OCT.				NOV.				DEC.			
	N	S	M		N	S	M		N	S	M		N	S	M		N	S	M		N	S	M	
1	28	22	29	21	14	9	7	16 KK	9	4	8	4QCC	6	5	4	7QCC	7	7	8	6 CC	15	13	4	24
2	25	16	19	23	9	8	10	9QCK	15	9	5	19 KK	9	12	15	7 CC	12	6	8	10 CC	90	74	62	103
3	19	16	13	23	14	8	6	17 CK	14	10	19	5 K	13	20	12	21	6	9	8	7 CC	19	13	13	19
4	17	13	19	11	20	14	16	19	10	12	14	8 CC	10	14	16	9 C	13	14	5	23 K	23	26	7	43
5	11	11	5	17 KK	62	67	70	60	7	4	5	7QCC	13	14	15	13 C	19	11	17	14	27	26	38	17
6	45	26	12	59	36	36	36	36	7	4	4	6QCC	15	15	16	15 K	11	16	14	13 KC	9	11	15	9 CK
7	25	23	33	16	30	37	30	37	10	6	5	12 CC	11	8	7	12QCC	8	10	8	10 CC	6	7	5	8QCC
8	28	22	26	25	26	18	25	19	14	10	13	12 CK	4	11	6	9 CC	7	8	7	8QCC	3	5	6	2QCC
9	29	23	22	30	40	32	30	43	19	21	17	23	6	4	4	5QCC	5	8	6	8QCC	4	10	10	4 CC
10	28	34	31	31	24	24	25	23	24	25	29	21	9	6	6	9QCC	13	23	5	32	8	11	6	13 K
11	19	16	23	13	48	30	35	43	29	28	28	29	29	16	14	32	12	12	12	12 C	55	63	68	50
12	10	4	7	7QCC	19	23	25	17	15	9	15	10 K	40	57	67	31	29	39	32	36	27	31	34	24
13	18	20	15	23	25	24	20	29	40	46	33	53	24	27	24	28	52	39	43	48	34	27	27	34
14	28	40	55	13	21	27	14	34	15	11	18	9 K	28	19	13	33	71	59	48	62	14	11	13	10 C
15	25	15	17	24	21	23	29	15	14	15	22	8 K	36	37	50	23	42	39	51	29	9	10	12	8 CC
16	38	41	40	38	13	18	9	23	17	11	8	20	15	12	12	16	27	30	27	31	16	16	6	26
17	28	25	24	30	40	56	41	55	14	17	20	11	25	17	16	27	17	13	16	13	17	16	27	9
18	16	17	14	20	19	25	22	22	11	6	10	10 CK	34	27	22	39	11	14	12	14 CK	4	7	7	4QCC
19	43	36	30	50	36	38	39	35	60	62	14	108	38	45	62	42	15	11	12	14 CC	4	7	6	5QCC
20	45	49	53	41	16	12	18	10	50	56	44	62	14	13	9	19	7	7	8	6 CC	7	7	7	8QCC
21	19	13	18	15	8	9	10	8QCC	69	67	77	60	12	7	10	9 C	8	6	9	5 CC	11	12	7	16 CC
22	19	24	28	15	12	6	7	11QCC	68	91	70	89	34	36	39	31	6	6	10	3QCC	10	10	14	7 CC
23	12	6	12	6 CC	15	12	8	19 K	26	48	16	60	14	7	13	9 C	4	4	2	5QCC	7	6	4	10 CC
24	18	10	11	17 C	20	19	18	22	22	17	21	19	11	13	13	12 CC	4	4	5	3QCC	6	11	11	6 CC
25	12	7	10	10QCC	39	49	26	61	20	16	14	23	8	8	5	11QCC	27	27	4	50	7	9	4	12 CK
26	7	3	5	5QCC	28	23	27	24	27	35	19	44	9	11	8	12 K	30	24	33	22	21	17	19	20
27	7	2	3	6QCC	29	32	35	26	30	20	43	8	73	86	66	92	22	15	28	10	6	14	14	9 CC
28	7	3	4	7QC	13	12	13	12 C	15	17	13	19 K	64	49	74	40	7	12	13	8 CC	20	22	12	31
29	69	103	101	71	11	9	10	10 CC	5	5	5	5QCK	17	19	16	20	15	12	10	16	15	16	20	12
30	25	23	37	12	10	9	6	13QCC	6	8	7	8QCC	17	20	11	26	23	23	30	17	12	11	11	12 CC
31	18	14	19	13 C	8	5	6	6QCC					9	9	11	8 CK					10	13	10	14 C
	23.8				23.4				22.7				20.9				17.7				16.7			
	21.9				23.0				23.1				20.7				16.9				17.2			
	22.9				23.2				23.0				20.9				17.3				17.0			

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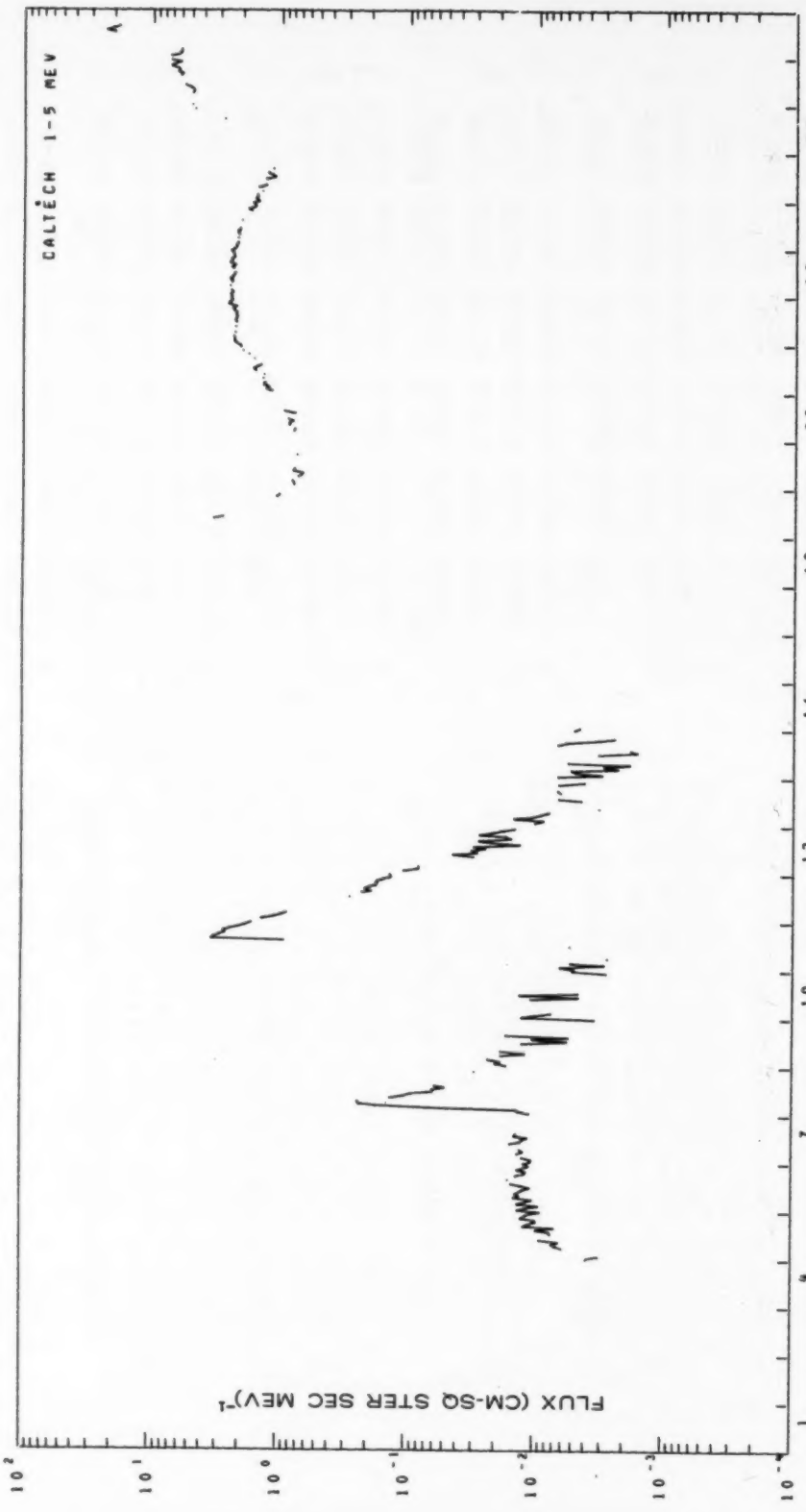
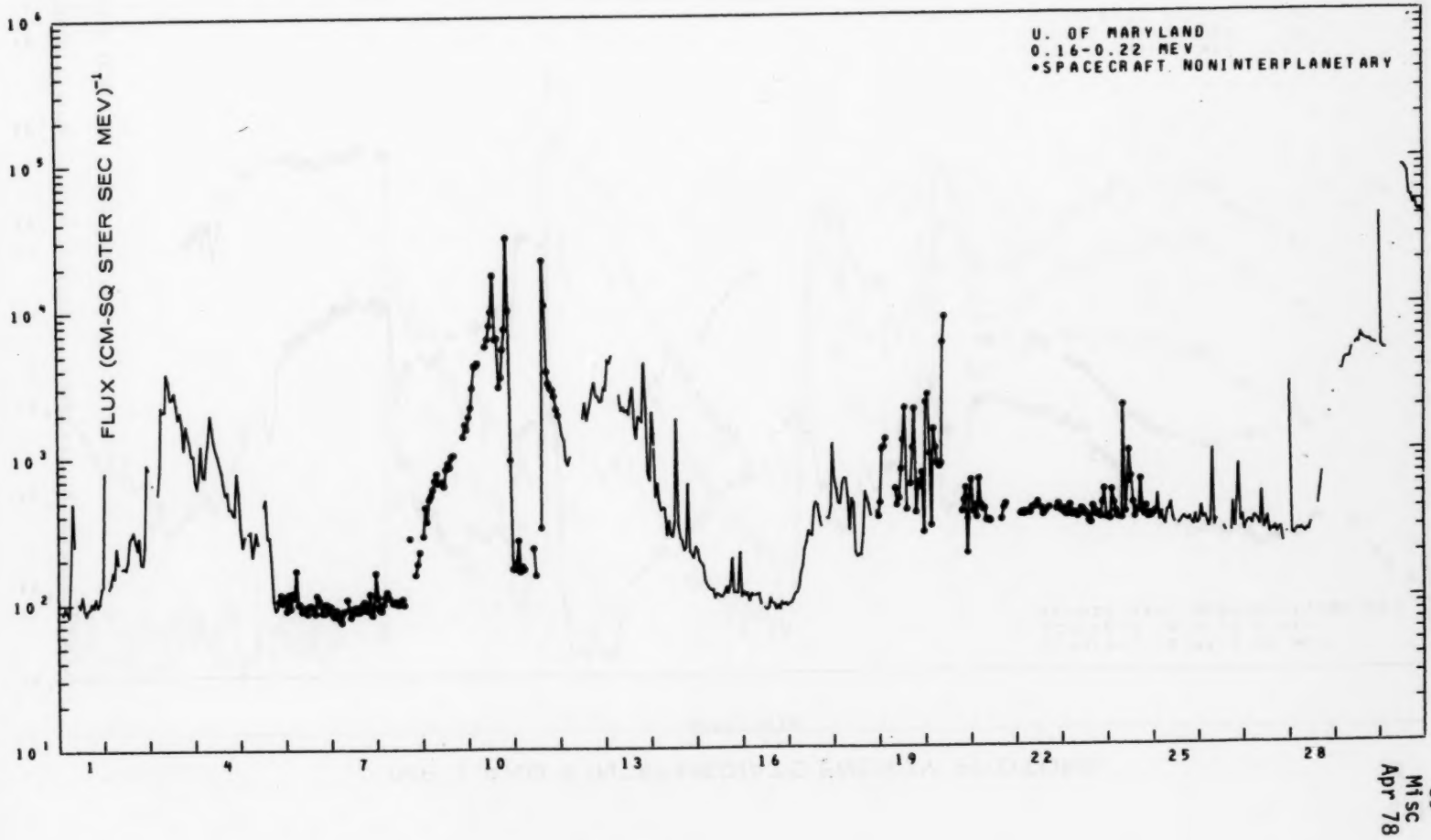
IMP 7 AND 8 ELECTRONS

APRIL 1978



IMP 7 AND 8 LOW ENERGY PROTONS

APRIL 1978



IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

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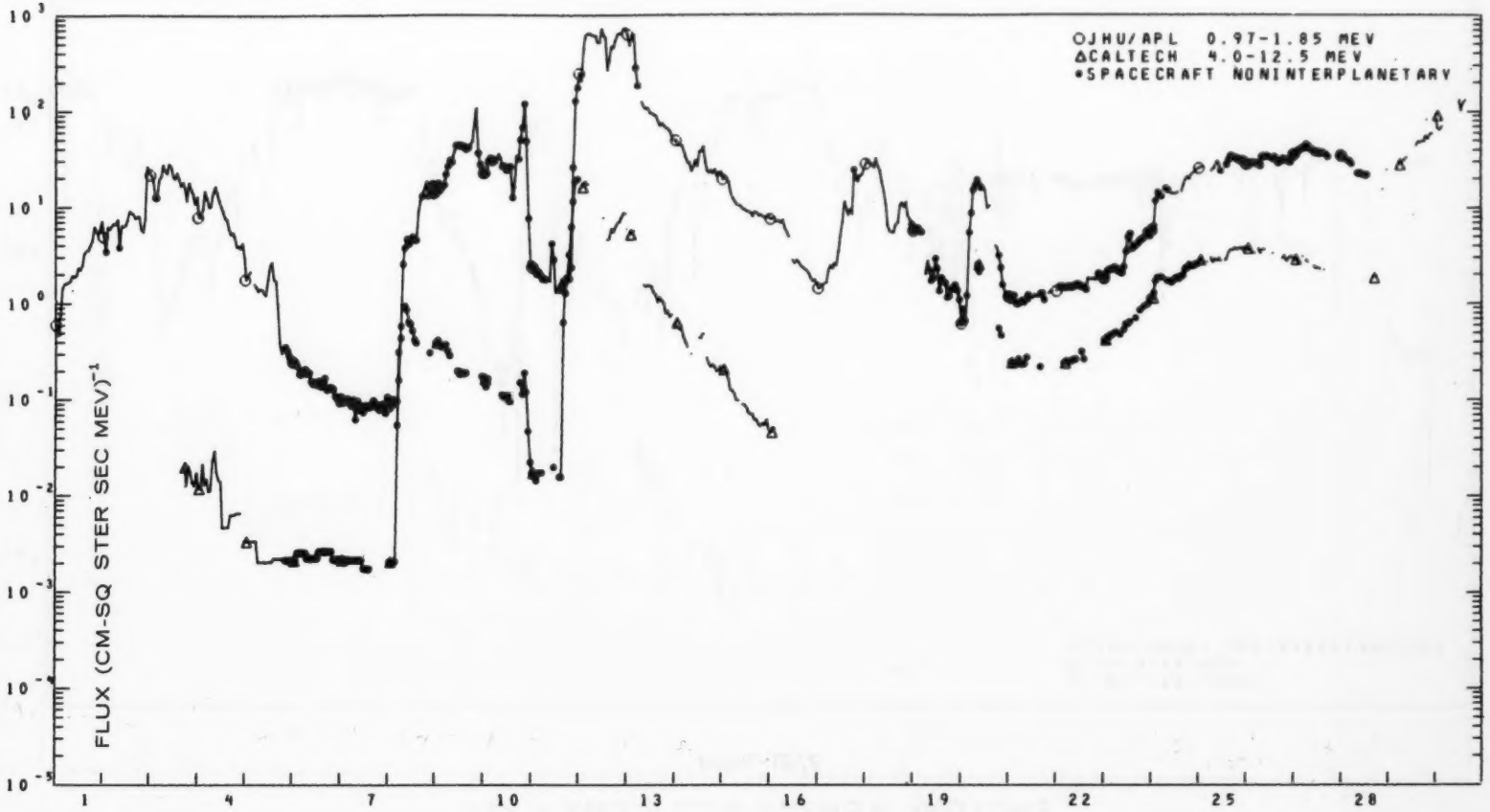

IMP 7 AND 8 HIGH ENERGY PROTONS

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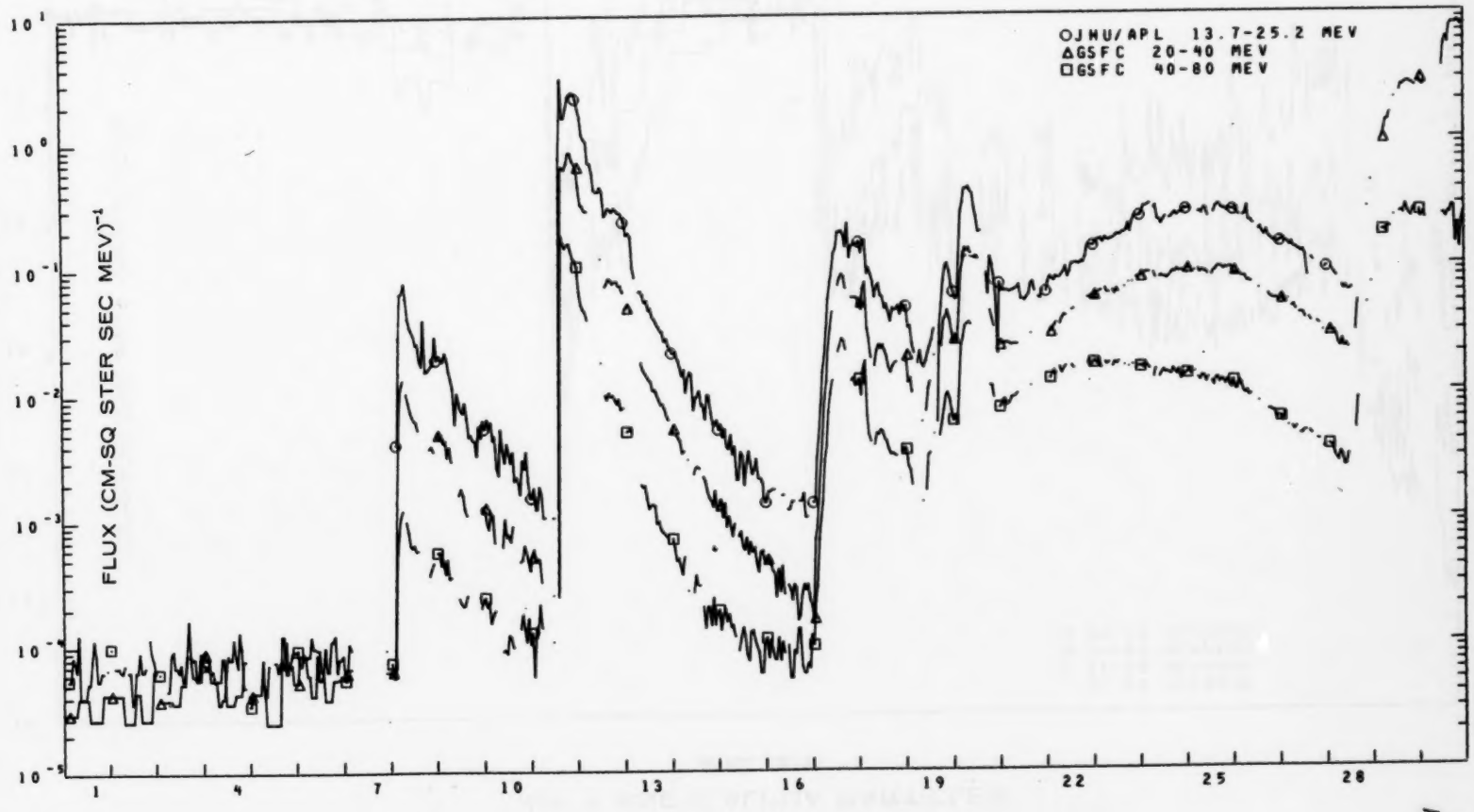
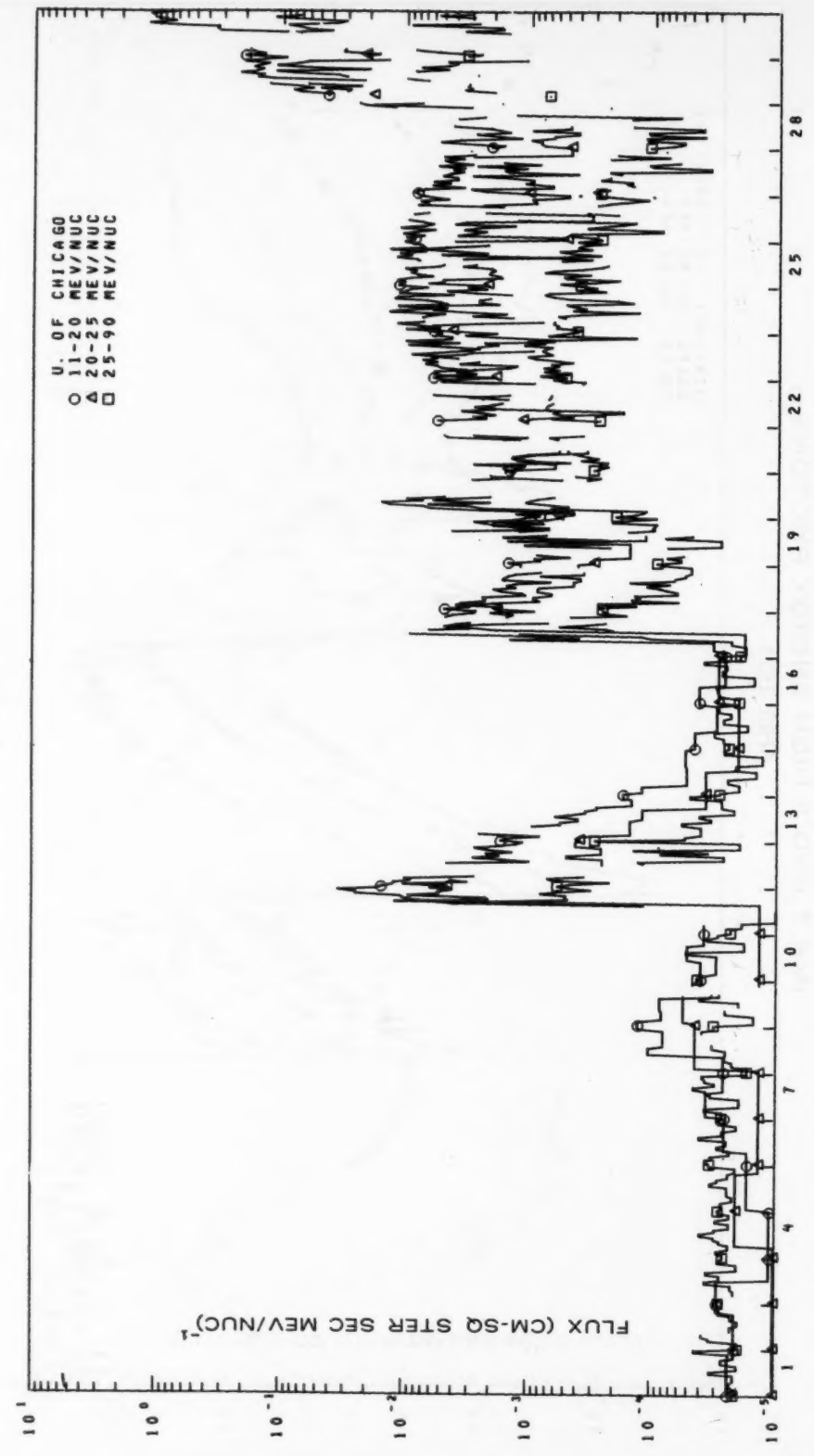


91
Misc
Apr 78


IMP 7 AND 8 ALPHA PARTICLES
APRIL 1978
U. OF CHICAGO
11-20 MEV/NUC
20-25 MEV/NUC
25-90 MEV/NUC
FLUX (CM-SQ STER SEC MEV/NUC)⁻¹
10¹
10⁰
10⁻¹
10⁻²
10⁻³
10⁻⁴
10⁻⁵
1
4
7
10
13
16
19
22
25
28

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